

2014 DRIVELINE/AXLES

All Wheel Drive (AWD) Module - Electrical Diagnostics - Compass & Patriot

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
<u>C1456</u>	AWD CLUTCH POWER CONTROL CIRCUIT LOW
<u>C145A</u>	AWD CLUTCH RETURN CONTROL CIRCUIT LOW
<u>C145D</u>	AWD CLUTCH POWER/RETURN CONTROL CIRCUIT OPEN
<u>C145F</u>	AWD SYSTEM TEMPORARILY DISABLED - OVERTEMPERATURE
<u>C1460</u>	AWD SWITCH CIRCUIT PERFORMANCE
<u>C2100</u>	BATTERY VOLTAGE LOW
<u>C2101</u>	BATTERY VOLTAGE HIGH
<u>C211C</u>	IGNITION RUN/START INPUT CIRCUIT LOW
<u>C211D</u>	IGNITION RUN/START INPUT CIRCUIT HIGH
<u>C211E</u>	BATTERY SUPPLY VOLTAGE LOW
<u>C211F</u>	BATTERY SUPPLY VOLTAGE HIGH
<u>C2208</u>	AWD ECU INTERNAL
<u>U0001</u>	CAN C BUS
<u>U0002</u>	CAN C BUS OFF PERFORMANCE
<u>U0100</u>	LOST COMMUNICATION WITH THE ECM/PCM
<u>U0121</u>	LOST COMMUNICATION WITH ABS
<u>U0141</u>	LOST COMMUNICATION WITH IPM (FCM/TIPM)
<u>U0401</u>	IMPLAUSIBLE DATA RECEIVED FROM ECM/PCM
<u>U0415</u>	IMPLAUSIBLE DATA RECEIVED FROM ABS
<u>U0423</u>	IMPLAUSIBLE DATA RECEIVED FROM CLUSTER/CCN
<u>U1113</u>	LOST WHEEL SPEED MESSAGES
<u>U1415</u>	IMPLAUSIBLE/MISSING VEHICLE CONFIGURATION RECEIVED

DIAGNOSIS AND TESTING

C1456-AWD CLUTCH POWER CONTROL CIRCUIT LOW

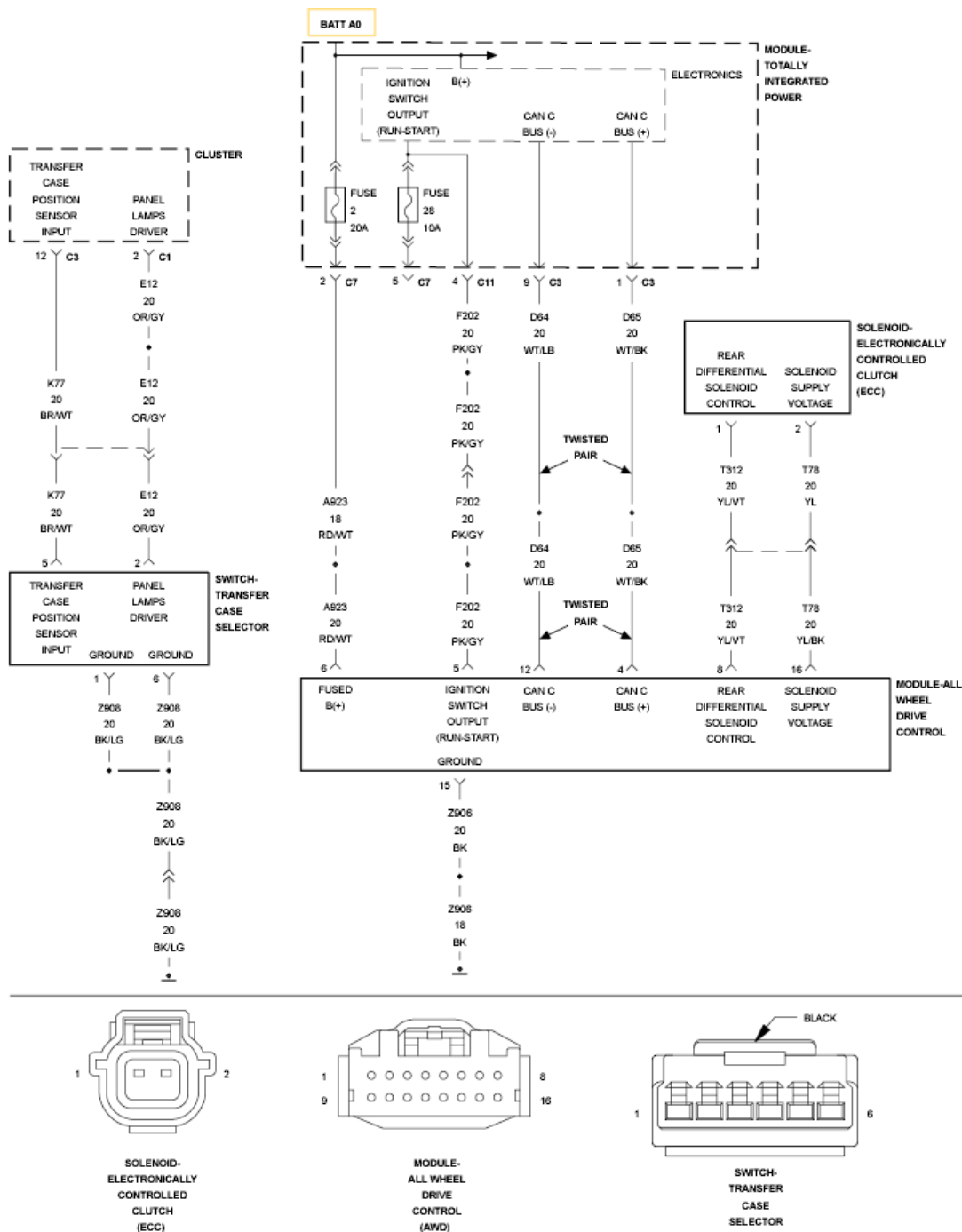


Fig. 1: All Wheel Drive Control Module Circuit Diagram
Courtesy of CHRYSLER GROUP, LLC

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

The Solenoid is active, no solenoid supply circuit DTCs are present and battery voltage is normal.

SET CONDITION

The All Wheel Drive (AWD) Control Module detects the Electronically Controlled Clutch (ECC) Solenoid Power Control is shorted low.

POSSIBLE CAUSES**Possible Causes**

(T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT
SHORTED TO GROUND
(T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT OPEN
(T78) SOLENOID SUPPLY VOLTAGE OPEN
(T78) SOLENOID SUPPLY VOLTAGE SHORTED TO GROUND
ALL WHEEL DRIVE (AWD) CONTROL MODULE
ELECTRONIC CONTROLLED CLUTCH (ECC)

DIAGNOSTIC TEST**1. VERIFY THE DTC IS ACTIVE**

1. Ignition on, engine not running.
2. With the scan tool, read DTCs.

Is the DTC active at this time?

Yes

- Go To 2

No

- Go To 10

2. ECC SOLENOID OPERATION

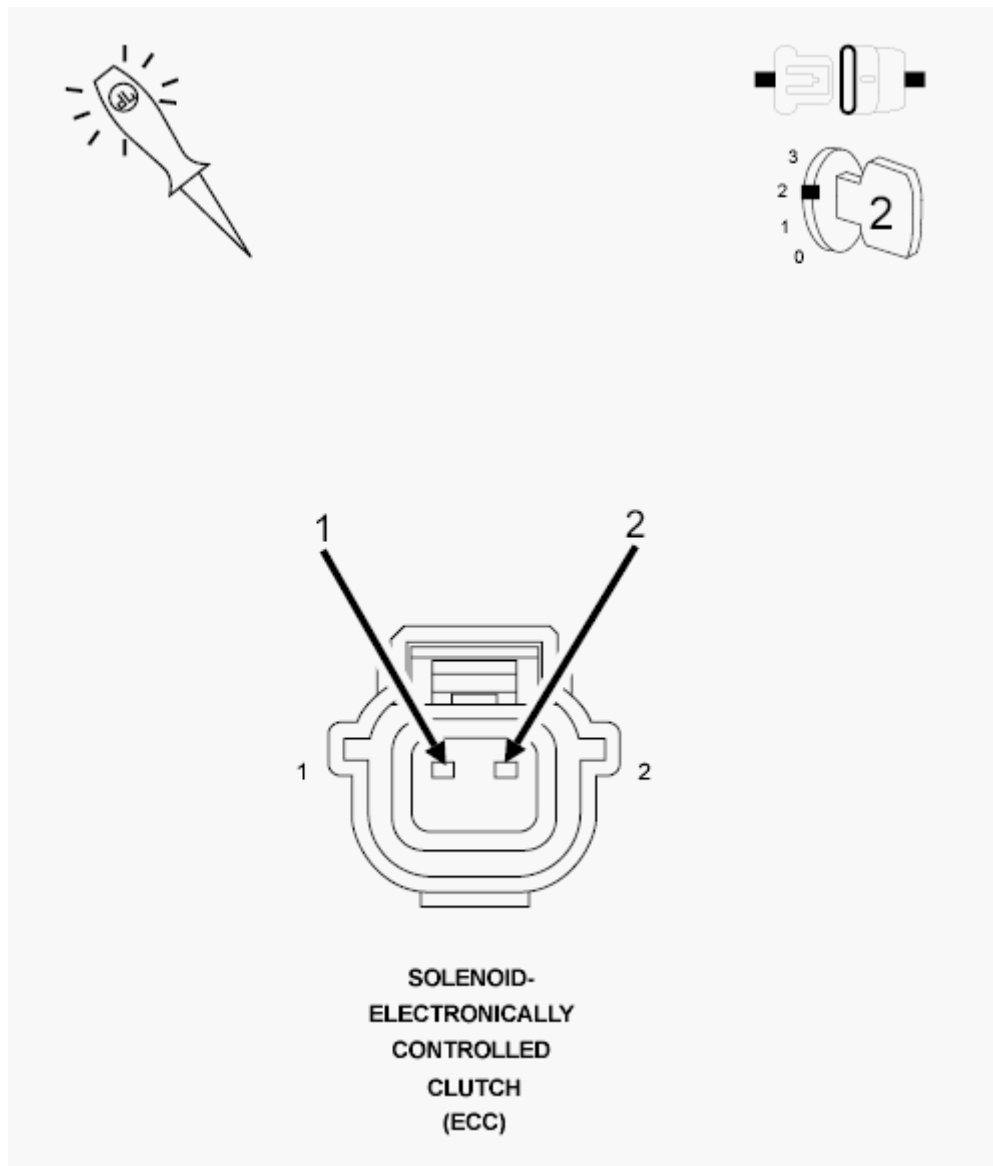


Fig. 2: Checking ECC Solenoid Operation
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the ECC Solenoid harness connector.
3. Ignition on, engine not running.
4. Using a 12-volt test light, jump across from the (T78) Solenoid Supply Voltage circuit and the (T312) Rear Differential Solenoid Control circuit in the ECC Solenoid harness connector.
5. With the scan tool, actuate the ECC Solenoid.

Does the test light illuminate brightly and flash on and off?

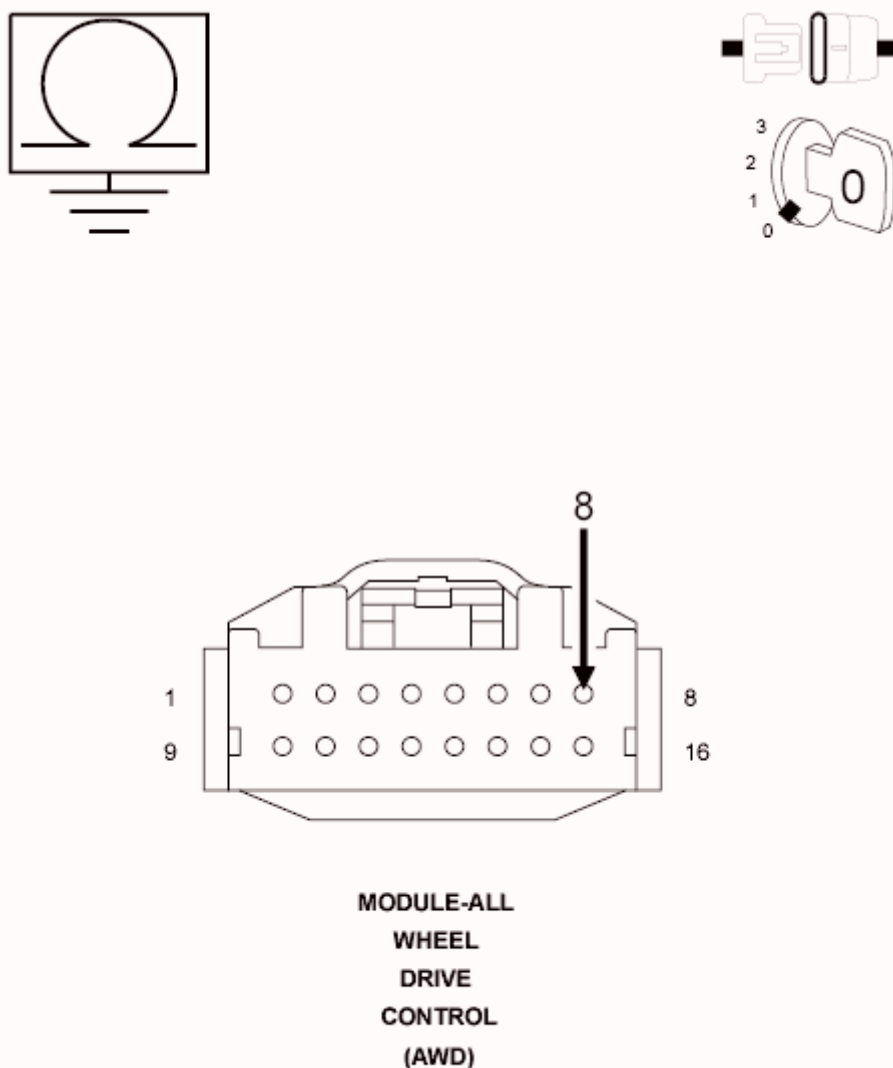
Yes

- Go To 9

No

- Go To 3

3. (T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT SHORTED TO GROUND



256800

Fig. 3: Checking Rear Differential Solenoid Control Circuit
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the AWD Control Module harness connector.

3. Measure the resistance between ground and the (T312) Rear Differential Solenoid Control circuit at the AWD Module harness connector.

Is the resistance below 100 Ohms?

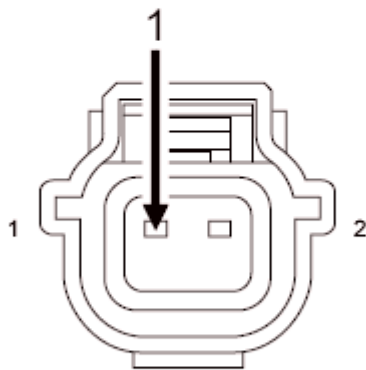
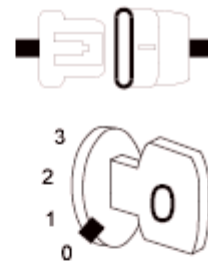
Yes

- Repair the short to ground in the (T312) Rear Differential Solenoid Control circuit.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

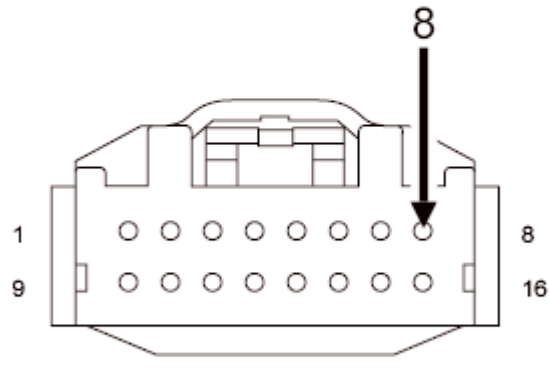
No

- Go To 4

4. **(T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT OPEN**



SOLENOID-
ELECTRONICALLY
CONTROLLED
CLUTCH
(ECC)



MODULE-ALL
WHEEL
DRIVE
CONTROL
(AWD)

256802

Fig. 4: Checking Rear Differential Solenoid Control Circuit For An Open

Courtesy of CHRYSLER GROUP, LLC

1. Measure the resistance of the (T312) Rear Differential Solenoid Control circuit between the ECC Solenoid harness connector and the AWD Control Module harness connector.

Is the resistance below 5.0 Ohms?

Yes

- Go To 5

No

- Repair the open in the (T312) Rear Differential Solenoid Control circuit.
- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

5. (T78) SWITCHED BATTERY SOLENOID SUPPLY CIRCUIT SHORTED TO GROUND

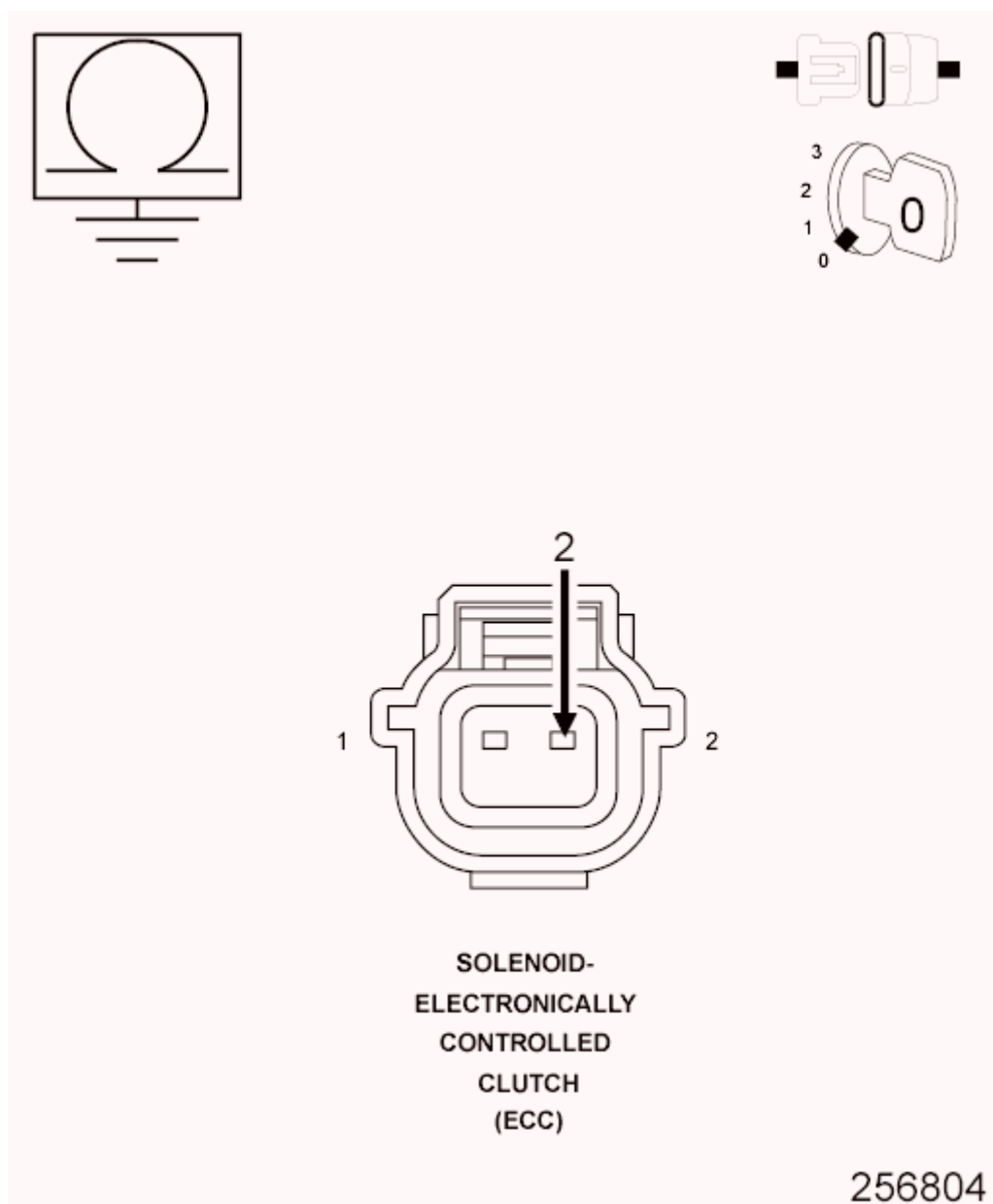


Fig. 5: Checking Switched Battery Solenoid Supply Circuit For A Short

To Ground

Courtesy of CHRYSLER GROUP, LLC

1. Measure the resistance between ground and the (T78) Solenoid Supply Voltage circuit at the ECC Solenoid harness connector.

Is the resistance below 100 Ohms?

Yes

- Repair the short to ground in the (T78) Solenoid Supply Voltage circuit.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Go To 6

6. (T78) SWITCHED BATTERY SOLENOID SUPPLY CIRCUIT OPEN

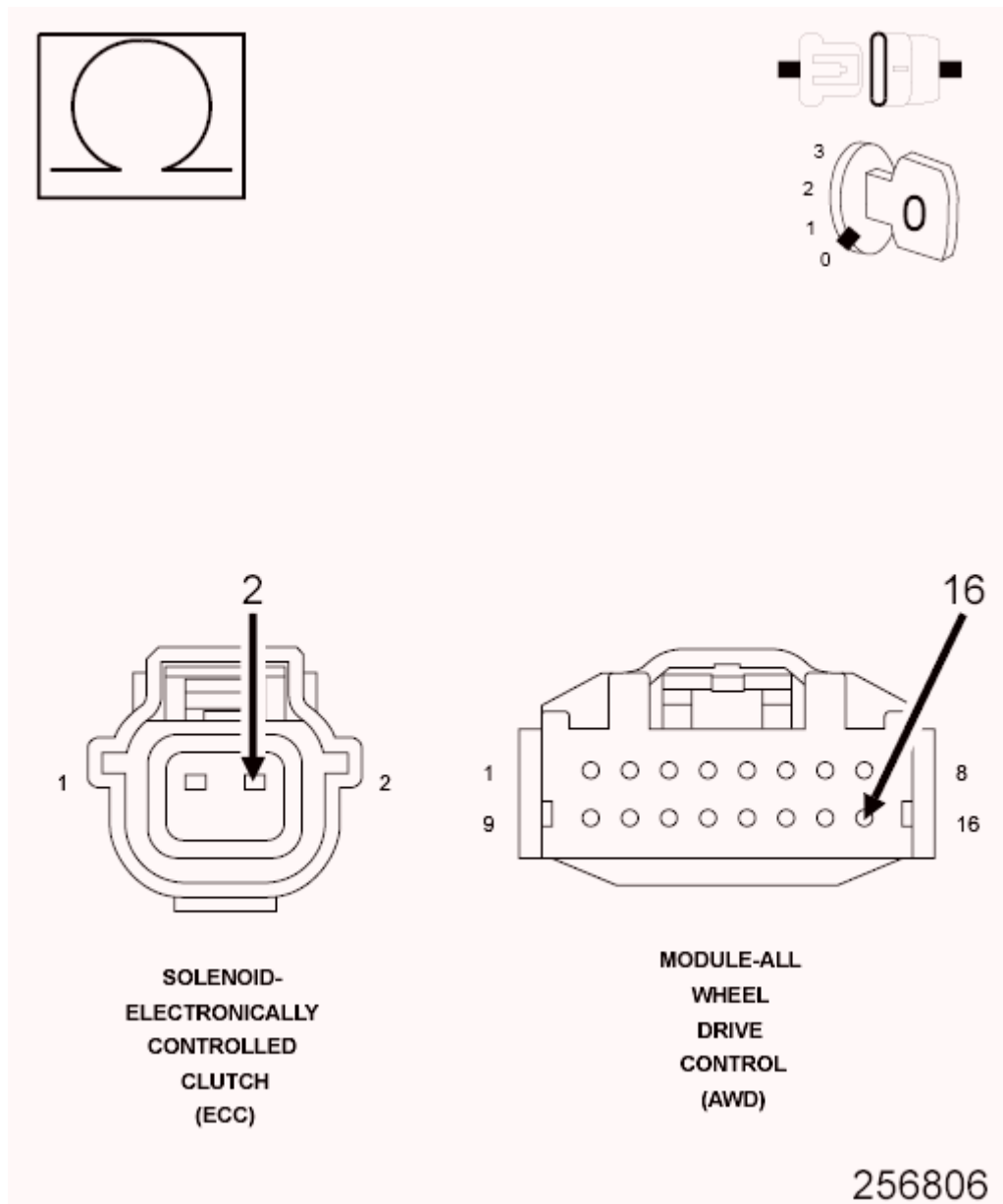


Fig. 6: Checking Switched Battery Solenoid Supply Circuit For An Open

Courtesy of CHRYSLER GROUP, LLC

1. Measure the resistance of the (T78) Solenoid Supply Voltage circuit between the ECC Solenoid harness connector and the AWD Control Module harness connector.

Is the resistance below 5.0 Ohms?

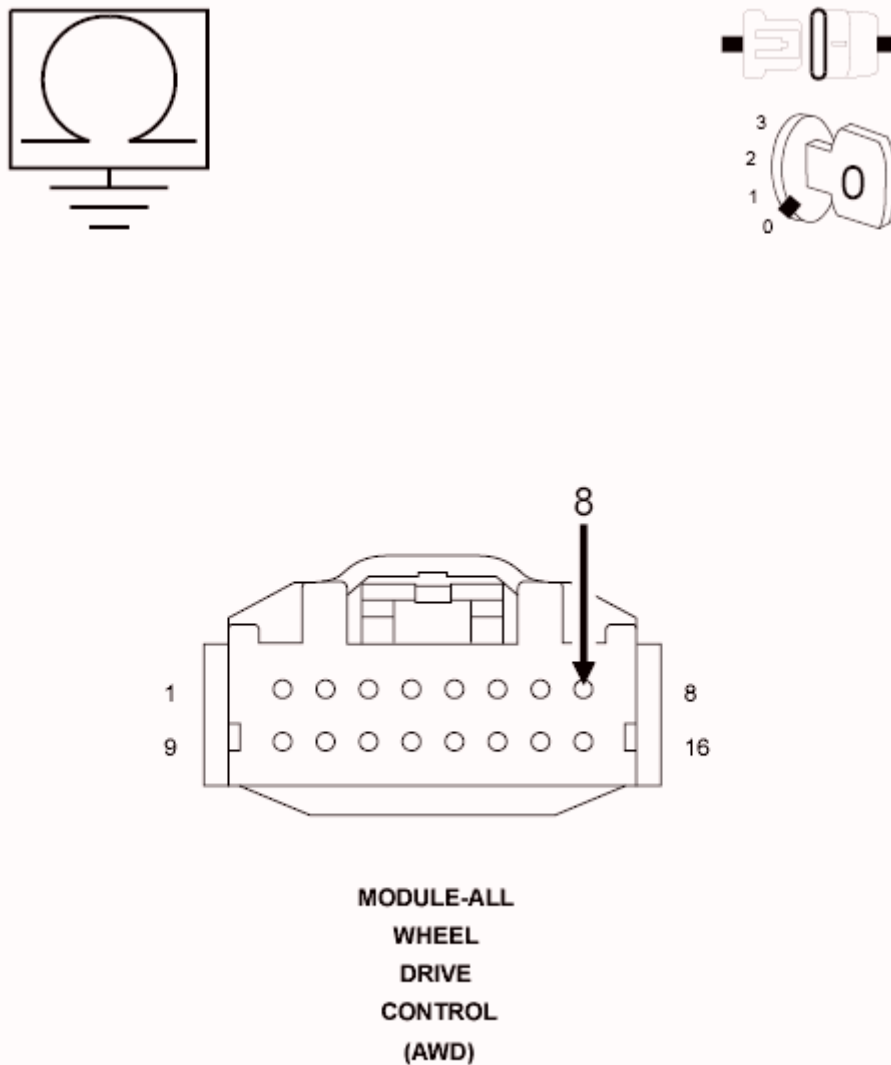
Yes

- Go To 7

No

- Repair the open in the (T78) Solenoid Supply Voltage circuit.
- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

7. ECC SOLENOID (T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT SHORTED INTERNALLY



256800

Fig. 7: Checking Rear Differential Solenoid Control Circuit
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the AWD Control Module harness connector.
3. Connect the ECC Solenoid harness connector.

4. Measure the resistance between ground and the (T312) Rear Differential Solenoid Control circuit at the AWD Module harness connector.

Is the resistance below 100 Ohms?

Yes

- Repair the short to ground in the (T312) Rear Differential Solenoid Control circuit.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Go To 8

8. AWD CONTROL MODULE

NOTE: Before continuing, check the AWD Control Module harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Replace the All Wheel Drive (AWD) Control Module Control Module in accordance with Service Information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

9. ELECTRONICALLY CONTROLLED CLUTCH (ECC)

NOTE: Before continuing, check the ECC Solenoid jumper harness connector terminals for corrosion, damage, or terminals push out, repair/replace as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Replace the Electronically Controlled Clutch (ECC) Solenoid in accordance with Service Information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

10. INTERMITTENT WIRING AND CONNECTORS

1. The conditions necessary to set this DTC are not present at this time.
2. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit.
3. Wiggle test the wiring harness and connectors while checking for shorted and open circuits.
4. Using the scan tool, monitor the data related to this circuit while performing the wiggle test. Look for the data to change or for the DTC to reset.

Were there any problems found?

Yes

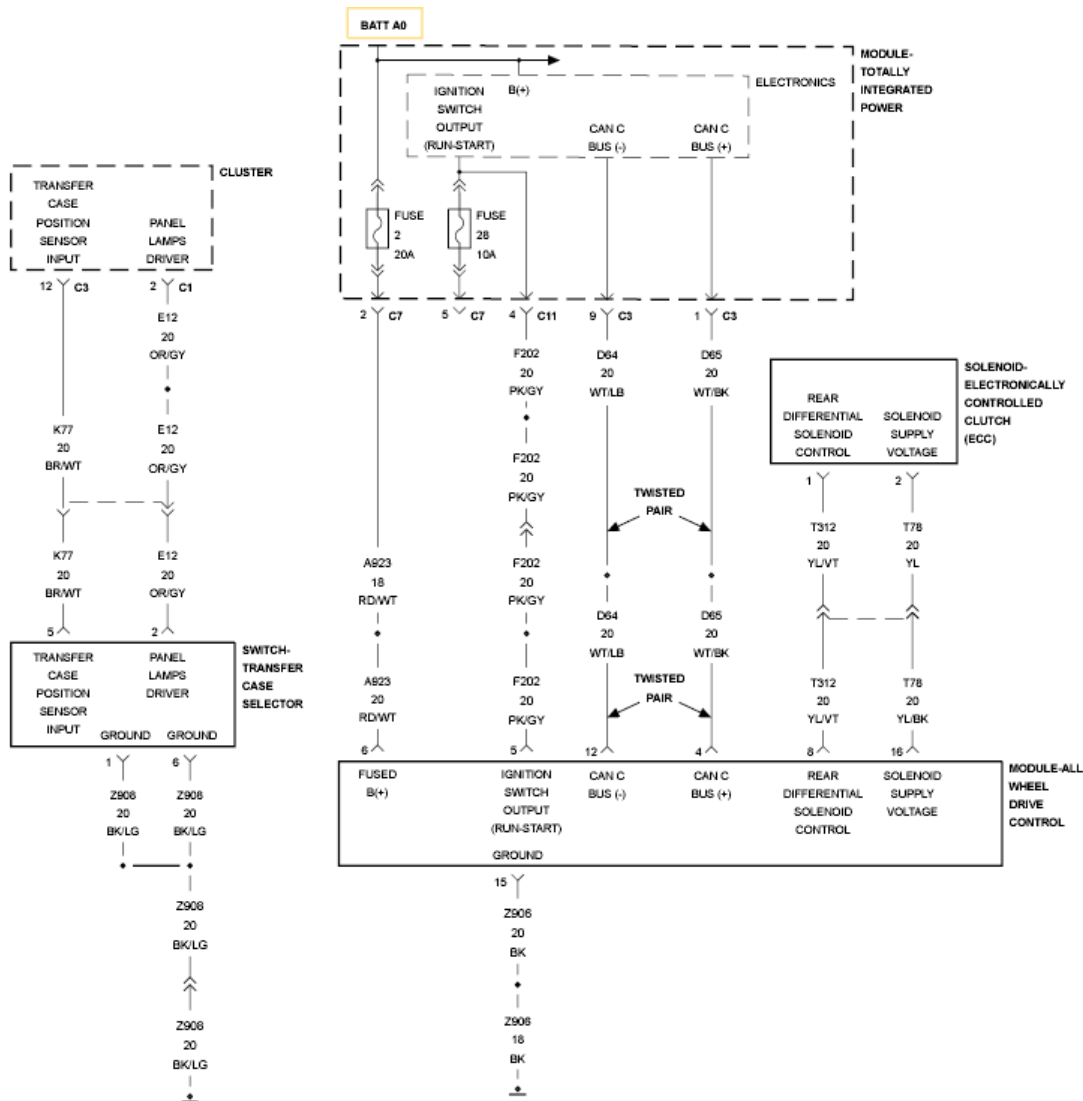
- Repair as necessary.

- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

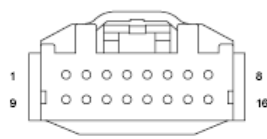
No

- Test Complete.

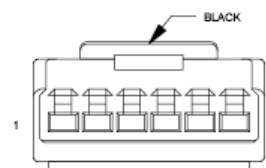
C145A-AWD CLUTCH RETURN CONTROL CIRCUIT LOW



SOLENOID-ELECTRONICALLY CONTROLLED CLUTCH (ECC)



MODULE-ALL WHEEL DRIVE CONTROL (AWD)



SWITCH-TRANSFER CASE SELECTOR

Fig. 8: All Wheel Drive Control Module Circuit Diagram
Courtesy of CHRYSLER GROUP, LLC

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

The Solenoid is active, no solenoid supply circuit DTCs are present and battery voltage is normal.

SET CONDITION

The All Wheel Drive (AWD) Control Module detects the Electronically Controlled Clutch (ECC) Solenoid Supply is shorted low.

POSSIBLE CAUSES

Possible Causes
(T78) SOLENOID SUPPLY VOLTAGE OPEN (T78) SOLENOID SUPPLY VOLTAGE SHORTED TO GROUND (T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT SHORTED TO GROUND (T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT OPEN ALL WHEEL DRIVE (AWD) CONTROL MODULE ELECTRONIC CONTROLLED CLUTCH (ECC)

DIAGNOSTIC TEST

1. VERIFY THE DTC IS ACTIVE

1. Ignition on, engine not running.
2. With the scan tool, read DTCs.

Is the DTC active at this time?

Yes

- Go To 2

No

- Go To 10

2. ECC SOLENOID OPERATION

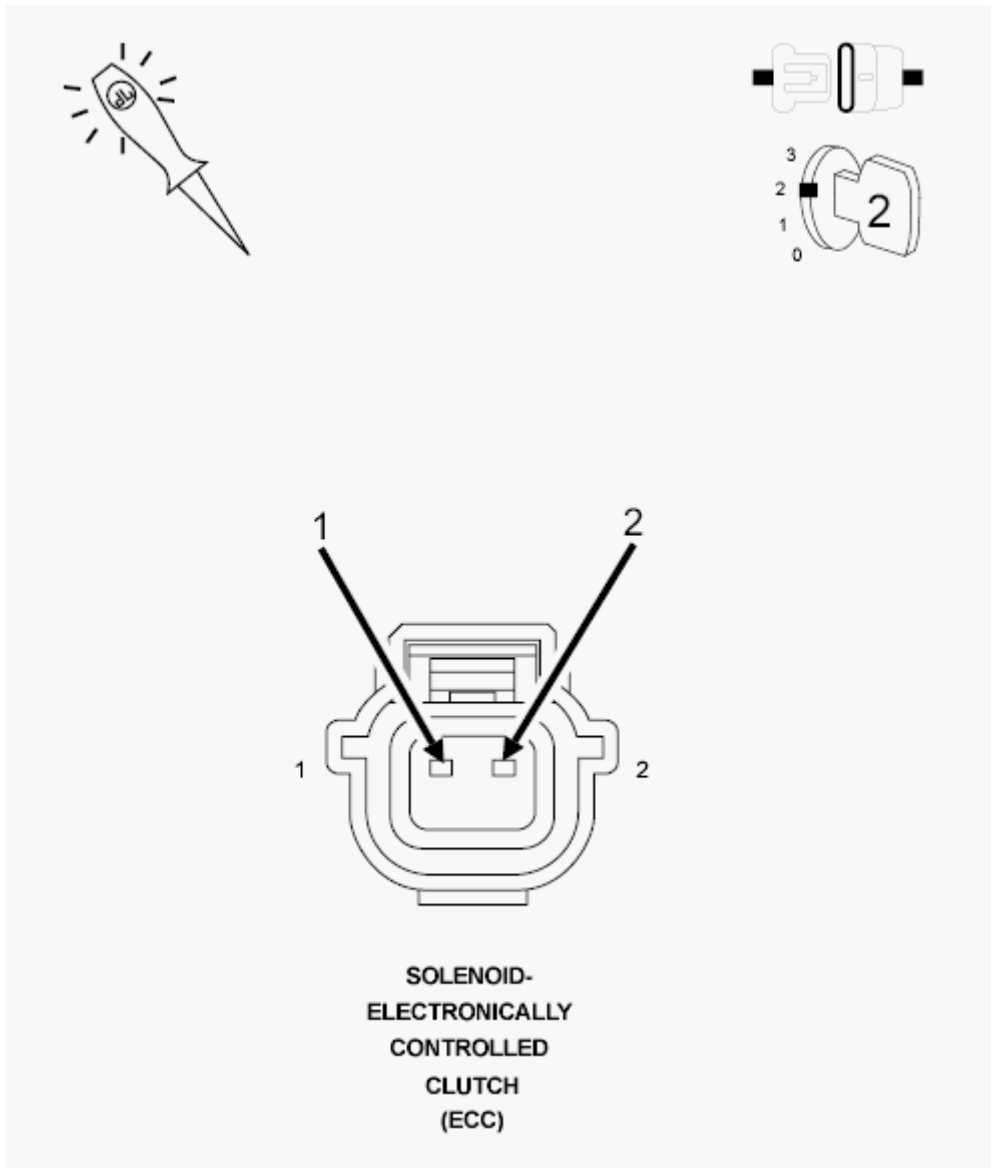


Fig. 9: Checking ECC Solenoid Operation
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the ECC Solenoid harness connector.
3. Ignition on, engine not running.
4. Using a 12-volt test light, jump across from the (T78) Solenoid Supply Voltage circuit and the (T312) Rear Differential Solenoid Control circuit in the ECC Solenoid harness connector.
5. With the scan tool, actuate the ECC Solenoid.

Does the test light illuminate brightly and flash on and off?

Yes

- Go To 9

No

- Go To 3

3. (T78) SWITCHED BATTERY SOLENOID SUPPLY CIRCUIT SHORTED TO GROUND

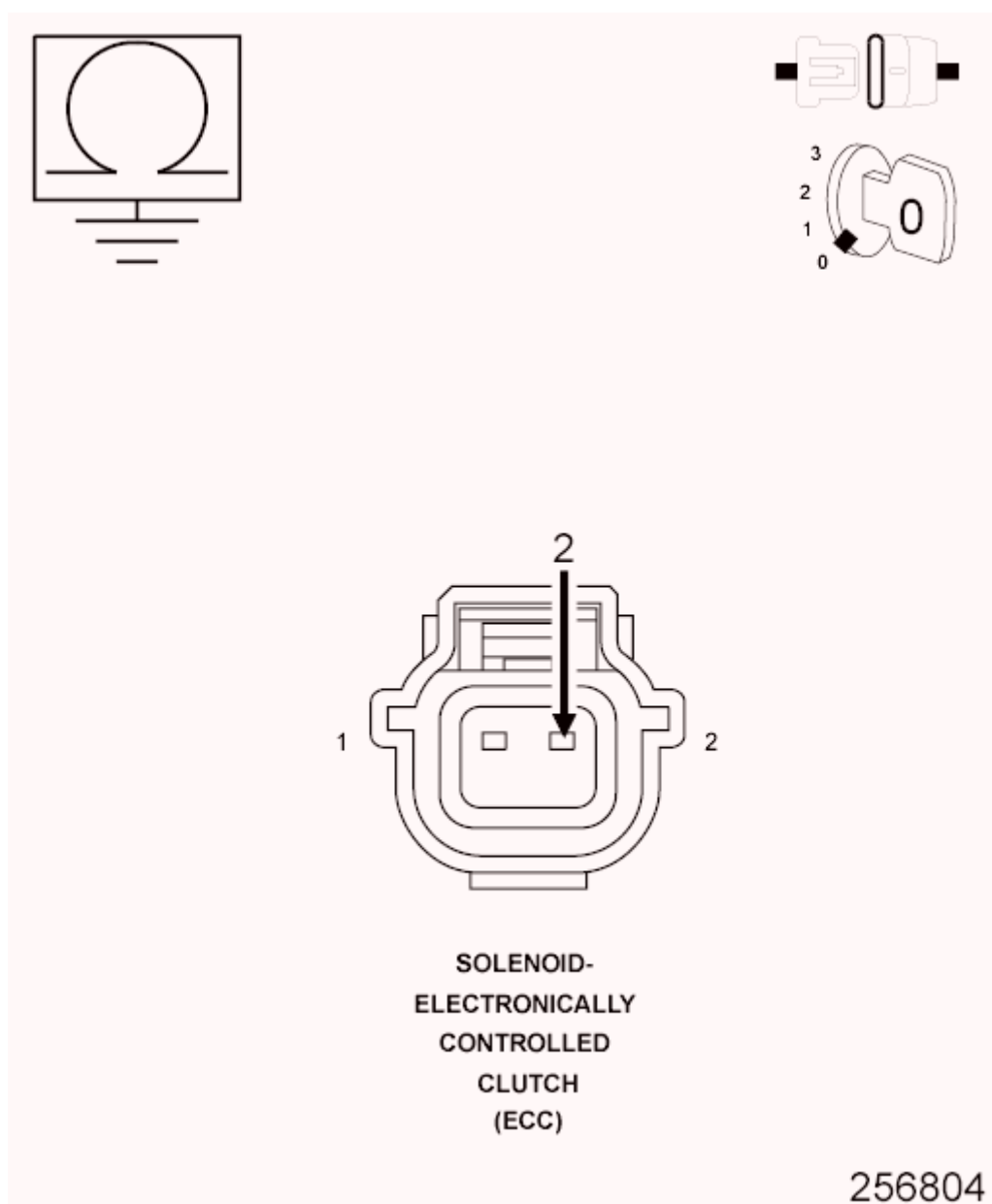


Fig. 10: Checking Switched Battery Solenoid Supply Circuit For A

Short To Ground

Courtesy of CHRYSLER GROUP, LLC

1. Measure the resistance between ground and the (T78) Solenoid Supply Voltage circuit at the ECC Solenoid harness connector.

Is the resistance below 100 Ohms?

Yes

- Repair the short to ground in the (T78) Solenoid Supply Voltage circuit.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Go To 4

4. (T78) SWITCHED BATTERY SOLENOID SUPPLY CIRCUIT OPEN

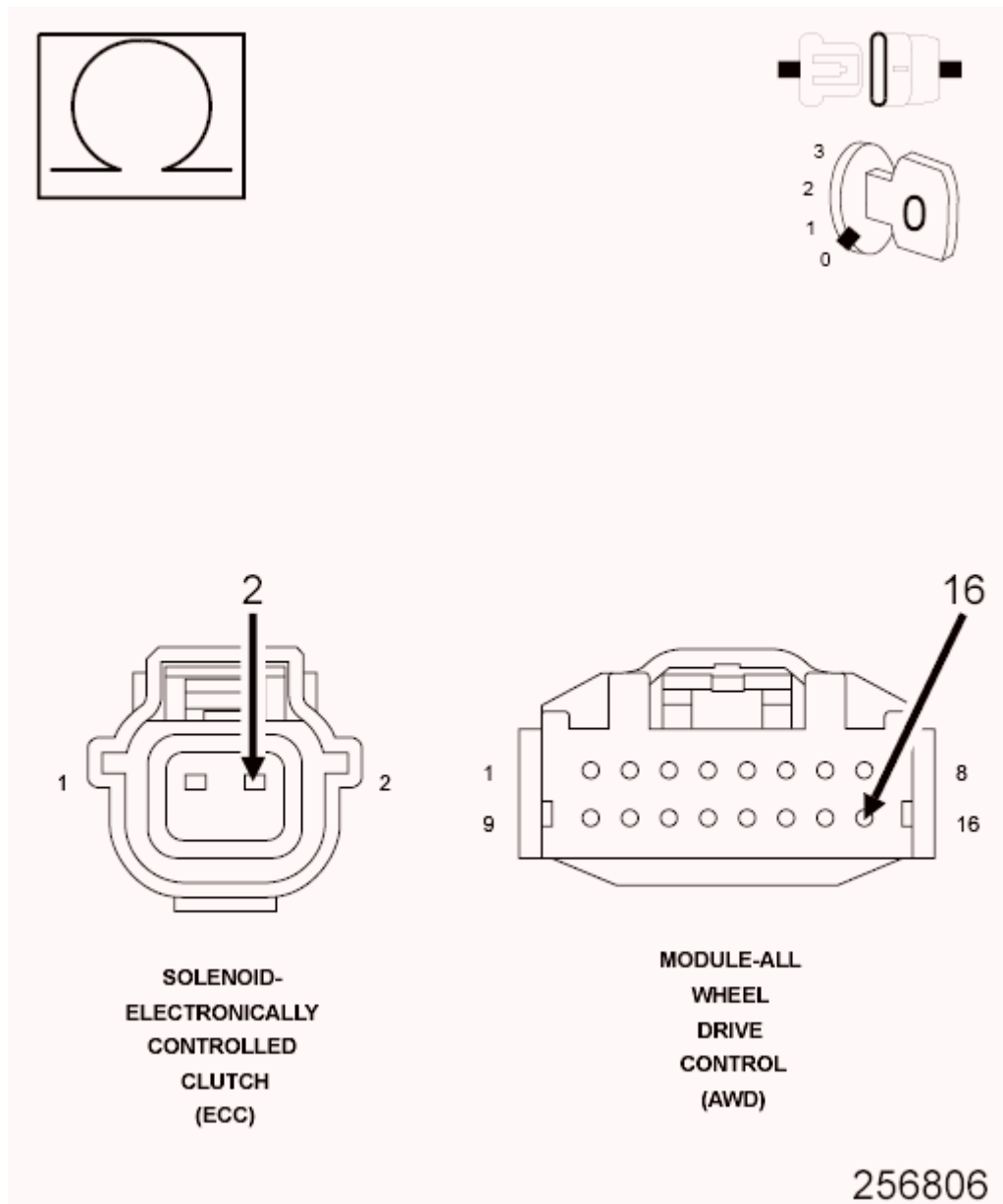


Fig. 11: Checking Switched Battery Solenoid Supply Circuit For An Open

Courtesy of CHRYSLER GROUP, LLC

1. Measure the resistance of the (T78) Solenoid Supply Voltage circuit between the ECC Solenoid harness connector and the AWD Control Module harness connector.

Is the resistance below 5.0 Ohms?

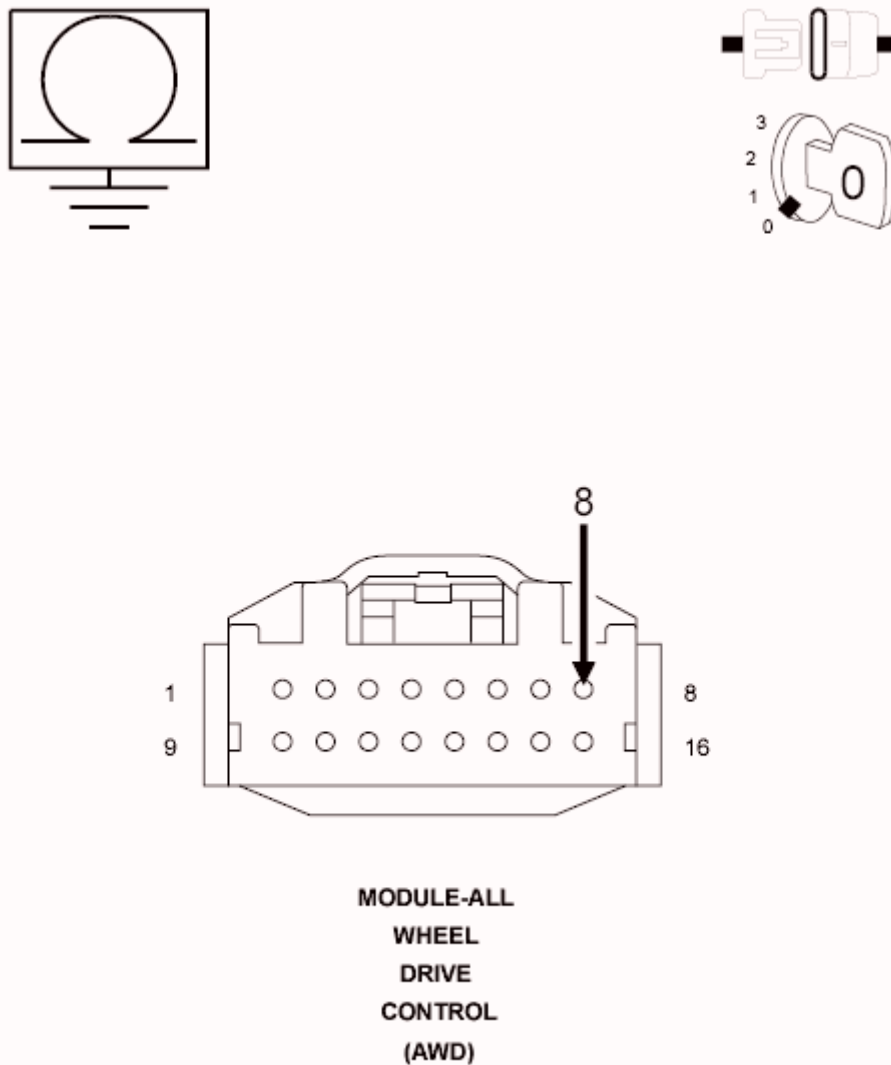
Yes

- Go To 5

No

- Repair the open in the (T78) Solenoid Supply Voltage circuit.
- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

5. **(T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT SHORTED TO GROUND**



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Fig. 12: Checking Rear Differential Solenoid Control Circuit
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the AWD Control Module harness connector.
3. Measure the resistance between ground and the (T312) Rear

Differential Solenoid Control circuit at the AWD Module harness connector.

Is the resistance below 100 Ohms?

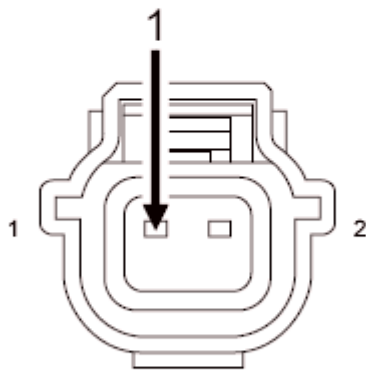
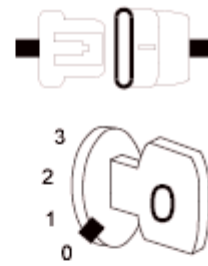
Yes

- Repair the short to ground in the (T312) Rear Differential Solenoid Control circuit.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

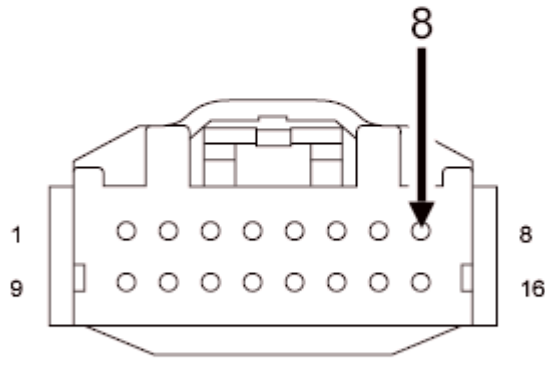
No

- Go To 6

6. (T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT OPEN



SOLENOID-
ELECTRONICALLY
CONTROLLED
CLUTCH
(ECC)



MODULE-ALL
WHEEL
DRIVE
CONTROL
(AWD)

256802

Fig. 13: Checking Rear Differential Solenoid Control Circuit For An Open

Courtesy of CHRYSLER GROUP, LLC

1. Measure the resistance of the (T312) Rear Differential Solenoid Control circuit between the ECC Solenoid harness connector and the AWD Control Module harness connector.

Is the resistance below 5.0 Ohms?

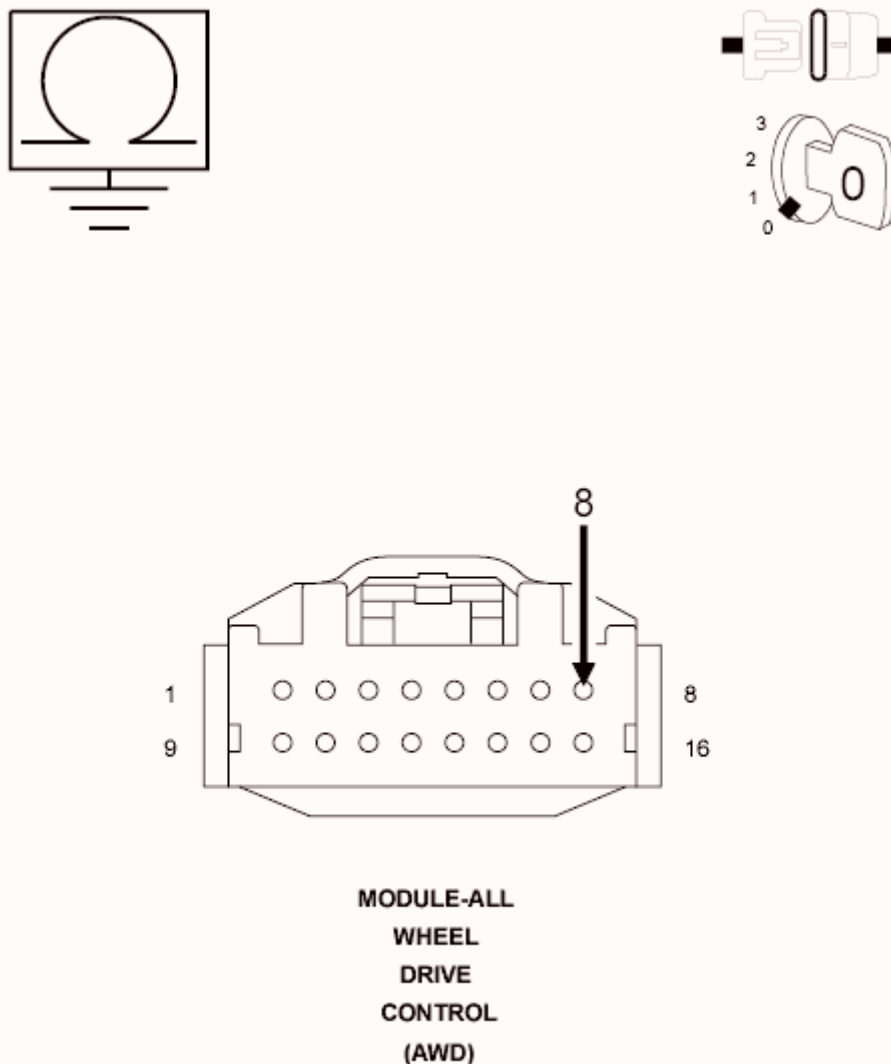
Yes

- Go To 7

No

- Repair the open in the (T312) Rear Differential Solenoid Control circuit.
- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

7. ECC SOLENOID (T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT SHORTED INTERNALLY



256800

Fig. 14: Checking Rear Differential Solenoid Control Circuit
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the AWD Control Module harness connector.
3. Connect the ECC Solenoid harness connector.
4. Measure the resistance between ground and the (T312) Rear Differential Solenoid Control circuit at the AWD Module harness connector.

Is the resistance below 100 Ohms?

Yes

- Repair the short to ground in the (T312) Rear Differential Solenoid Control circuit.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Go To 8

8. AWD CONTROL MODULE

NOTE: Before continuing, check the AWD Control Module harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Replace the All Wheel Drive (AWD) Control Module in

accordance with Service Information.

- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

9. ELECTRONICALLY CONTROLLED CLUTCH (ECC)

NOTE: Before continuing, check the ECC Solenoid jumper harness connector terminals for corrosion, damage, or terminals push out, repair/replace as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

No

- Replace the Electronically Controlled Clutch (ECC) Solenoid in accordance with Service Information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

10. INTERMITTENT WIRING AND CONNECTORS

1. The conditions necessary to set this DTC are not present at this time.
2. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit.
3. Wiggle test the wiring harness and connectors while checking for shorted and open circuits.
4. Using the scan tool, monitor the data related to this circuit while performing the wiggle test. Look for the data to change or for the DTC to reset.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

No

- Test Complete.

C145D-AWD CLUTCH POWER/RETURN CONTROL CIRCUIT OPEN

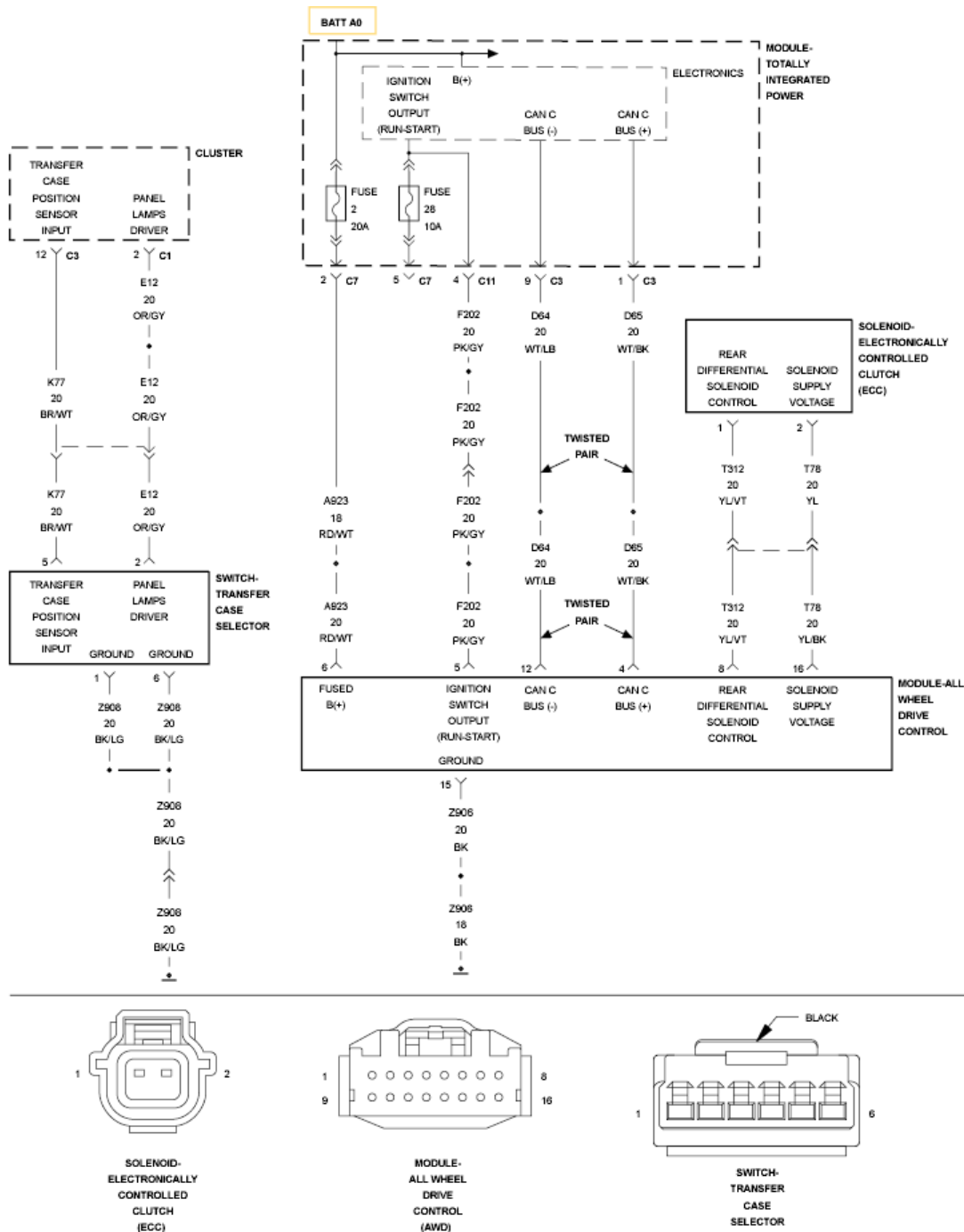


Fig. 15: All Wheel Drive Control Module Circuit Diagram
Courtesy of CHRYSLER GROUP, LLC

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

The Solenoid is active, no solenoid supply circuit DTCs are present and battery

voltage is normal.

SET CONDITION

The All Wheel Drive (AWD) Control Module detects the Electronically Controlled Clutch (ECC) Solenoid Supply or Return Control circuit is open.

POSSIBLE CAUSES**Possible Causes**

(T78) SOLENOID SUPPLY VOLTAGE OPEN
(T78) SOLENOID SUPPLY VOLTAGE SHORTED TO GROUND
(T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT OPEN
ELECTRONIC CONTROLLED CLUTCH (ECC)
ALL WHEEL DRIVE (AWD) CONTROL MODULE

DIAGNOSTIC TEST**1. VERIFY THE DTC IS ACTIVE**

1. Ignition on, engine not running.
2. Push the accelerator pedal and hold for 10 seconds.
3. With the scan tool, read DTCs.

Is the DTC active at this time?

Yes

- Go To 2

No

- Go To 8

2. ECC SOLENOID OPERATION

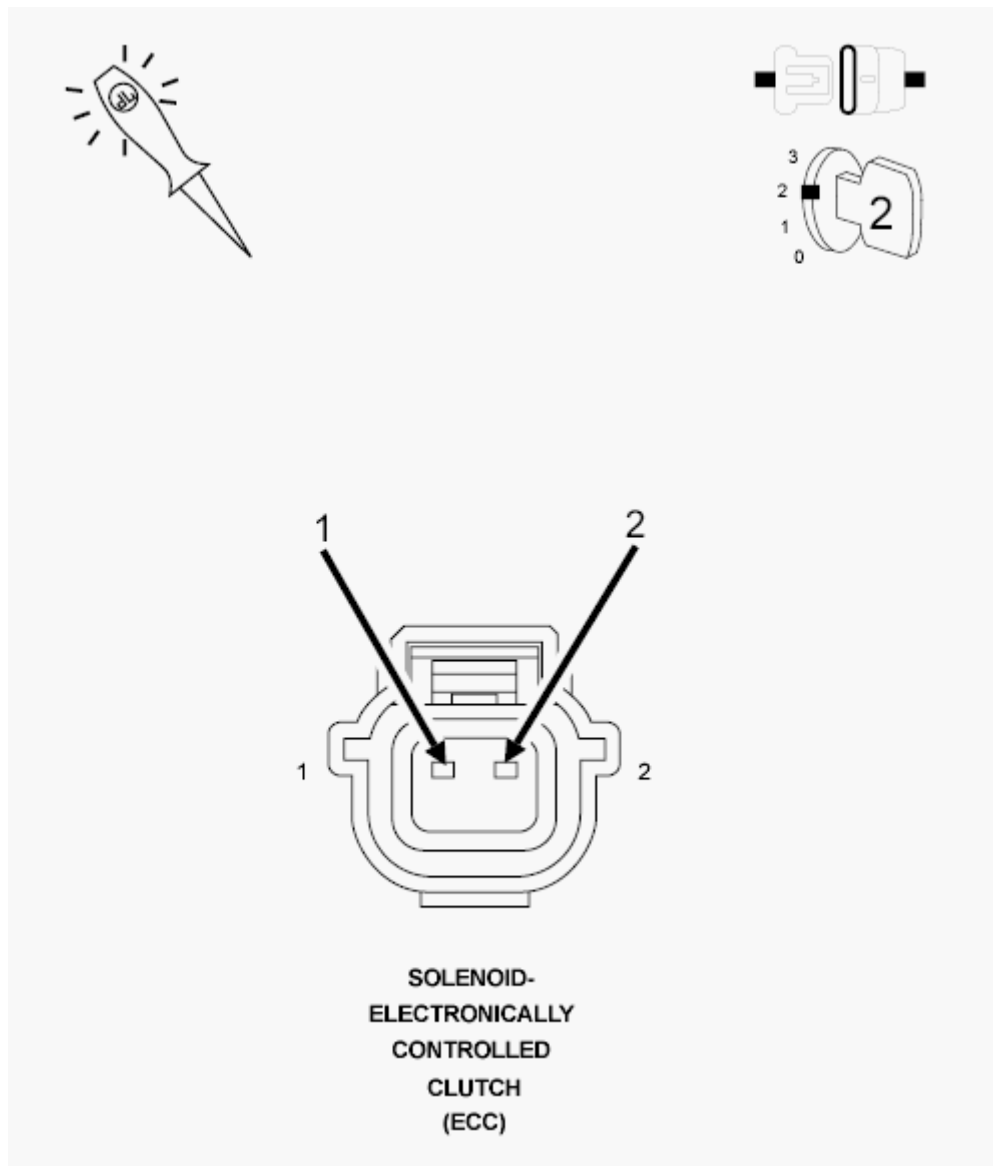


Fig. 16: Checking ECC Solenoid Operation
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the ECC Solenoid harness connector.
3. Ignition on, engine not running.
4. Using a 12-volt test light, jump across from the (T78) Solenoid Supply Voltage circuit and the (T312) Rear Differential Solenoid Control circuit in the ECC Solenoid harness connector.
5. With the scan tool, actuate the ECC Solenoid.

Does the test light illuminate brightly and flash on and off?

Yes

- Go To 7

No

- Go To 3

3. (T78) SWITCHED BATTERY SOLENOID SUPPLY CIRCUIT OPEN

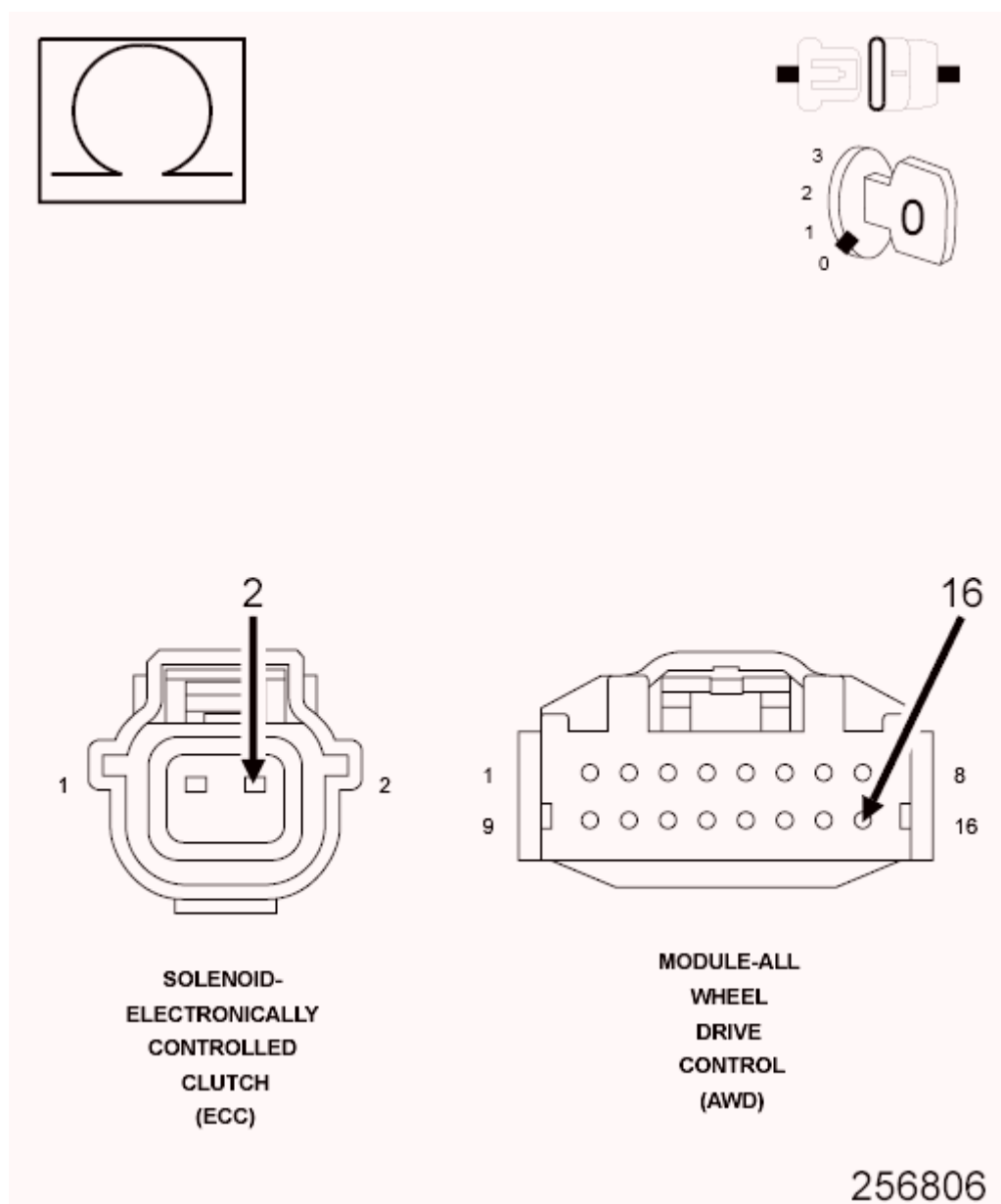


Fig. 17: Checking Switched Battery Solenoid Supply Circuit For An Open

Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the AWD Control Module harness connector.
3. Measure the resistance of the (T78) Solenoid Supply Voltage circuit between the ECC Solenoid harness connector and the AWD Control Module harness connector.

Is the resistance below 5.0 Ohms?

Yes

- Go To 4

No

- Repair the open in the (T78) Solenoid Supply Voltage circuit.
- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

**4. (T78) SWITCHED BATTERY SOLENOID SUPPLY CIRCUIT
SHORTED TO GROUND**

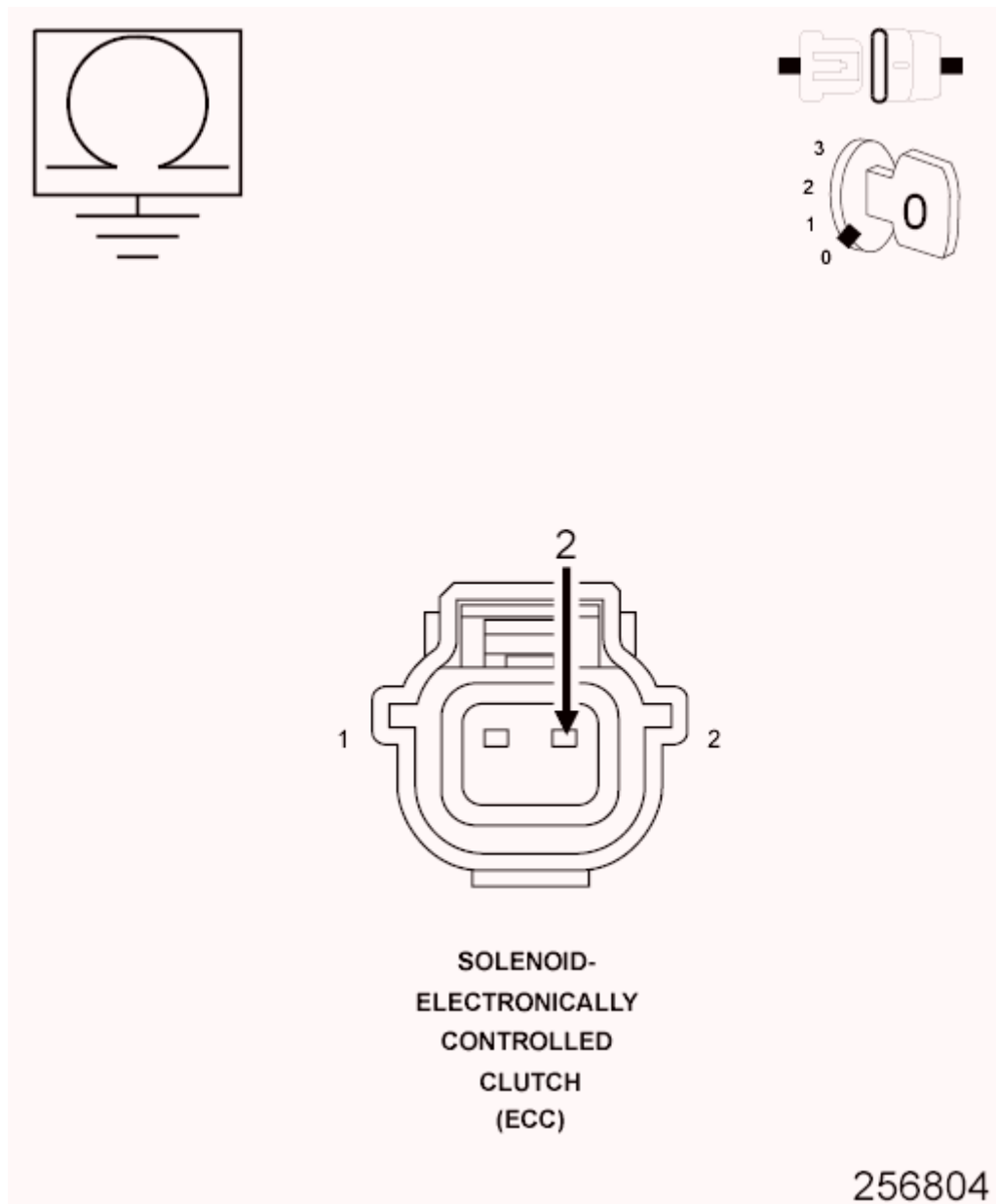


Fig. 18: Checking Switched Battery Solenoid Supply Circuit For A Short To Ground

Courtesy of CHRYSLER GROUP, LLC

1. Measure the resistance between ground and the (T78) Solenoid Supply Voltage circuit at the ECC Solenoid harness connector.

Is the resistance below 100 Ohms?

Yes

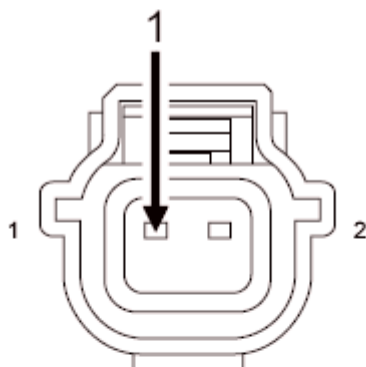
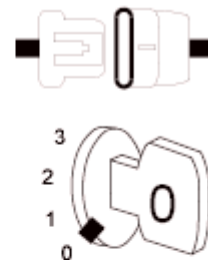
- Repair the short to ground in the (T78) Solenoid Supply Voltage circuit.

- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

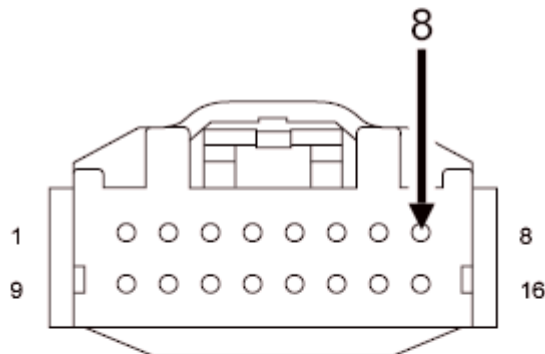
No

- Go To 5

5. (T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT OPEN



SOLENOID-
ELECTRONICALLY
CONTROLLED
CLUTCH
(ECC)



MODULE-ALL
WHEEL
DRIVE
CONTROL
(AWD)

256802

Fig. 19: Checking Rear Differential Solenoid Control Circuit For An Open

Courtesy of CHRYSLER GROUP, LLC

1. Measure the resistance of the (T312) Rear Differential Solenoid Control circuit between the ECC Solenoid harness connector and the AWD Control Module harness connector.

Is the resistance below 5.0 Ohms?

Yes

- Go To 6

No

- Repair the open in the (T312) Rear Differential Solenoid Control circuit.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

6. AWD CONTROL MODULE

NOTE: Before continuing, check the AWD Control Module harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Replace the All Wheel Drive (AWD) Control Module in accordance with Service Information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST.

Refer to **STANDARD PROCEDURE**.

7. ELECTRONICALLY CONTROLLED CLUTCH (ECC)

NOTE: Before continuing, check the ECC Solenoid jumper harness connector terminals for corrosion, damage, or terminals push out, repair/replace as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Replace Electronically Controlled Clutch (ECC) Solenoid in accordance with service information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

8. INTERMITTENT WIRING AND CONNECTORS

1. The conditions necessary to set this DTC are not present at this time.
2. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit.
3. Wiggle test the wiring harness and connectors while checking for shorted and open circuits.
4. Using the scan tool, monitor the data related to this circuit while performing the wiggle test. Look for the data to change or for the DTC to reset.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

No

- Test Complete.

C145F-AWD SYSTEM TEMPORARILY DISABLED - OVERTEMPERATURE

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

Ignition on.

SET CONDITION

The AWD Control Module detects an overheat condition due to excessive difference in speed across the ECC from hard driving conditions (Mud, Sand, Snow, 2WD Chassis dynamometer etc.).

POSSIBLE CAUSES

Possible Causes
DRIVING CONDITIONS ALL WHEEL DRIVE (AWD) CONTROL MODULE ELECTRONICALLY CONTROLLED CLUTCH (ECC)

Always perform the AWD Pre-Diagnostic Troubleshooting procedure before proceeding. Refer to STANDARD PROCEDURE.

DIAGNOSTIC TEST

1. ANTI-LOCK BRAKE SYSTEM (ABS) MODULE DTCS PRESENT

1. Ignition on, engine not running.
2. With the scan tool, select View DTCs in the ABS Module.

Are there any ABS DTCs present?

Yes

- Refer to **DIAGNOSIS AND TESTING** and perform the diagnostics for the DTCs in the ABS Module.

No

- Go To 2

2. DTC IS ACTIVE

NOTE: If C1456, C145A or C145D has set along with this DTC, diagnose those DTC(s) first before continuing.

1. Ignition on, engine not running.
2. With the scan tool, select View DTCs.

Is the status Active for this DTC?

Yes

- Go To 3

No

- Go To 5

3. VERIFY SET CONDITION

NOTE: Check with customer on driving terrain (e.g. mud, sand, snow) for set condition.

1. With the scan tool, erase DTCs.
2. Test drive vehicle on dry paved road.
3. With the scan tool, read DTCs.

Is the status Active for this DTC?

Yes

- Go To 4

No

- Test Complete.
- Perform AWD Control Module VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

4. AWD CONTROL MODULE

NOTE: Before continuing, check the AWD Control Module harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors. Pay particular attention to all Power and Ground circuits.

Were there any problems found?

Yes

- Repair as necessary.
- Perform AWD Control Module VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Replace AWD Control Module in accordance with Service Information.
- Perform AWD Control Module VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

5. CHECK THE WIRING AND CONNECTORS

1. The conditions necessary to set this DTC are not present at this time.
2. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit.
3. Wiggle test the wiring harness and connectors while checking for shorted and open circuits.
4. Using the scan tool, monitor the data related to this circuit while performing the wiggle test. Look for the data to change or for the DTC to reset.

Were there any problems found?

Yes

- Repair as necessary.
- Perform AWD Control Module VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Test Complete.

C1460-AWD SWITCH CIRCUIT PERFORMANCE



WHEN MONITORED

40

present.

SET CONDITION

The All Wheel Drive (AWD) Control Module Switch is not reporting a valid voltage for either switch position.

POSSIBLE CAUSES

Possible Causes
(K77) TRANSFER CASE POSITION SENSOR INPUT CIRCUIT SHORT TO GROUND
(K77) TRANSFER CASE POSITION SENSOR INPUT CIRCUIT SHORT TO VOLTAGE
(K77) TRANSFER CASE POSITION SENSOR INPUT CIRCUIT OPEN
(Z908) GROUND CIRCUIT OPEN
TRANSFER CASE SELECTOR SWITCH
ALL WHEEL DRIVE (AWD) CONTROL MODULE

DIAGNOSTIC TEST

1. VERIFY THE DTC IS ACTIVE

1. Ignition on, engine not running.

NOTE: Repair any system undervoltage or overvoltage DTCs that are set in this module before proceeding.

2. With the scan tool, read DTCs in the TIPM.

Is the DTC active at this time?

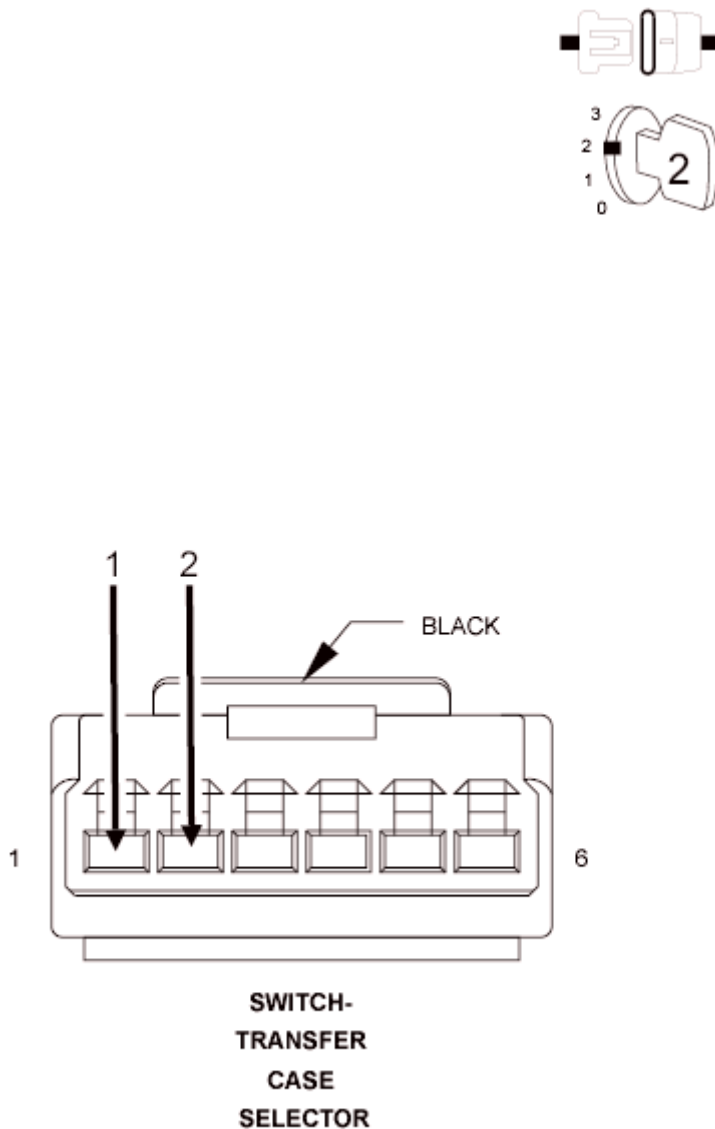
Yes

- Go To 2

No

- Go To 7

2. TRANSFER CASE SELECTOR SWITCH



280826

Fig. 21: Checking Transfer Case Selector Switch
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off to the lock position.
2. Disconnect the Transfer Case Selector Switch harness connector.
3. Connect a jumper wire between the (K77) Transfer Case Position Sensor Input circuit and the (Z908) Ground circuit in the Transfer Case Selector Switch harness connector.
4. Ignition on, engine not running.
5. With the scan tool, read the Transfer Case Position Sensor Switch voltage.
6. The switch voltage should be approximately 5.0 volts.

Does the voltage display as described?

Yes

- Replace the Transfer Case Selector Switch in accordance with the service information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Go To 3

**3. (K77) TRANSFER CASE POSITION SENSOR INPUT CIRCUIT
SHORTED TO GROUND**

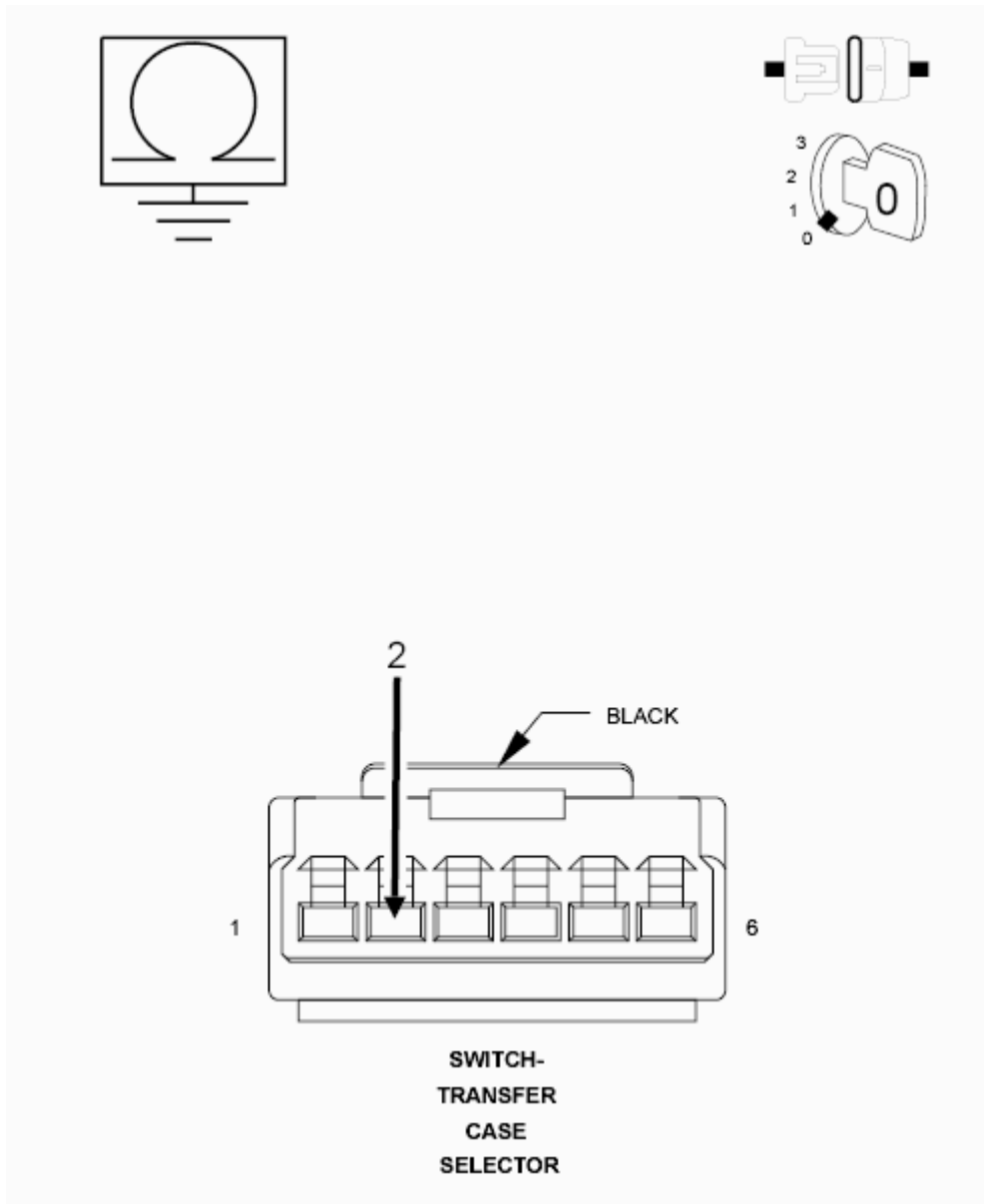


Fig. 22: Checking Transfer Case Position Sensor Input Circuit For A Short To Ground

Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off to the lock position.
2. Disconnect the CCN C3 harness connector.
3. Measure the resistance between ground and the (K77) Transfer Case Position Sensor Input circuit.

Is the resistance less than 5.0 Ohms?

Yes

- Repair the (K77) Transfer Case Position Sensor Input circuit for a short to ground.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Go To 4

4. (K77) TRANSFER CASE POSITION SENSOR INPUT CIRCUIT SHORTED TO VOLTAGE

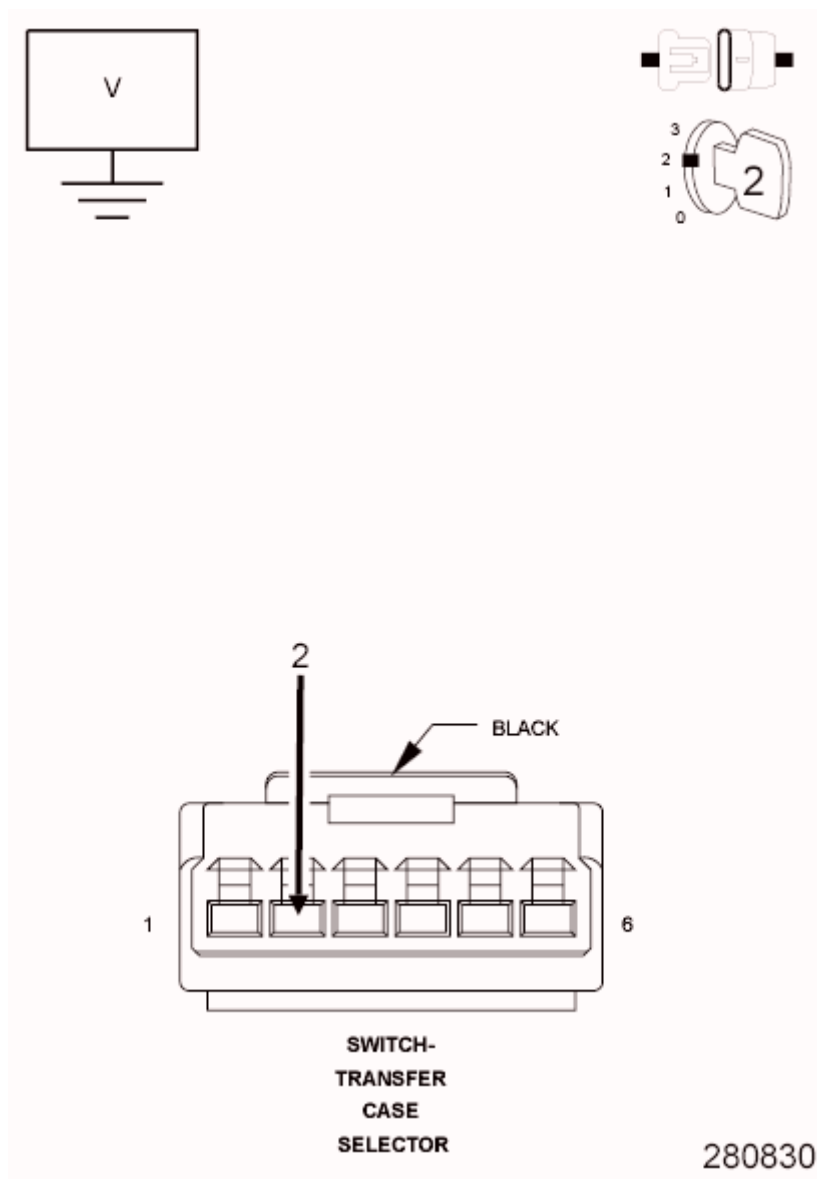


Fig. 23: Checking Transfer Case Position Sensor Input Circuit For A Short To Voltage

Courtesy of CHRYSLER GROUP, LLC

1. Ignition on, engine not running.
2. Measure the voltage of the (K77) Transfer Case Position Sensor Input circuit.

Is the voltage above 10 volts?

Yes

- Repair the (K77) Transfer Case Position Sensor Input circuit for a short to voltage.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Go To 5

5. (K77) TRANSFER CASE POSITION SENSOR INPUT CIRCUIT OPEN

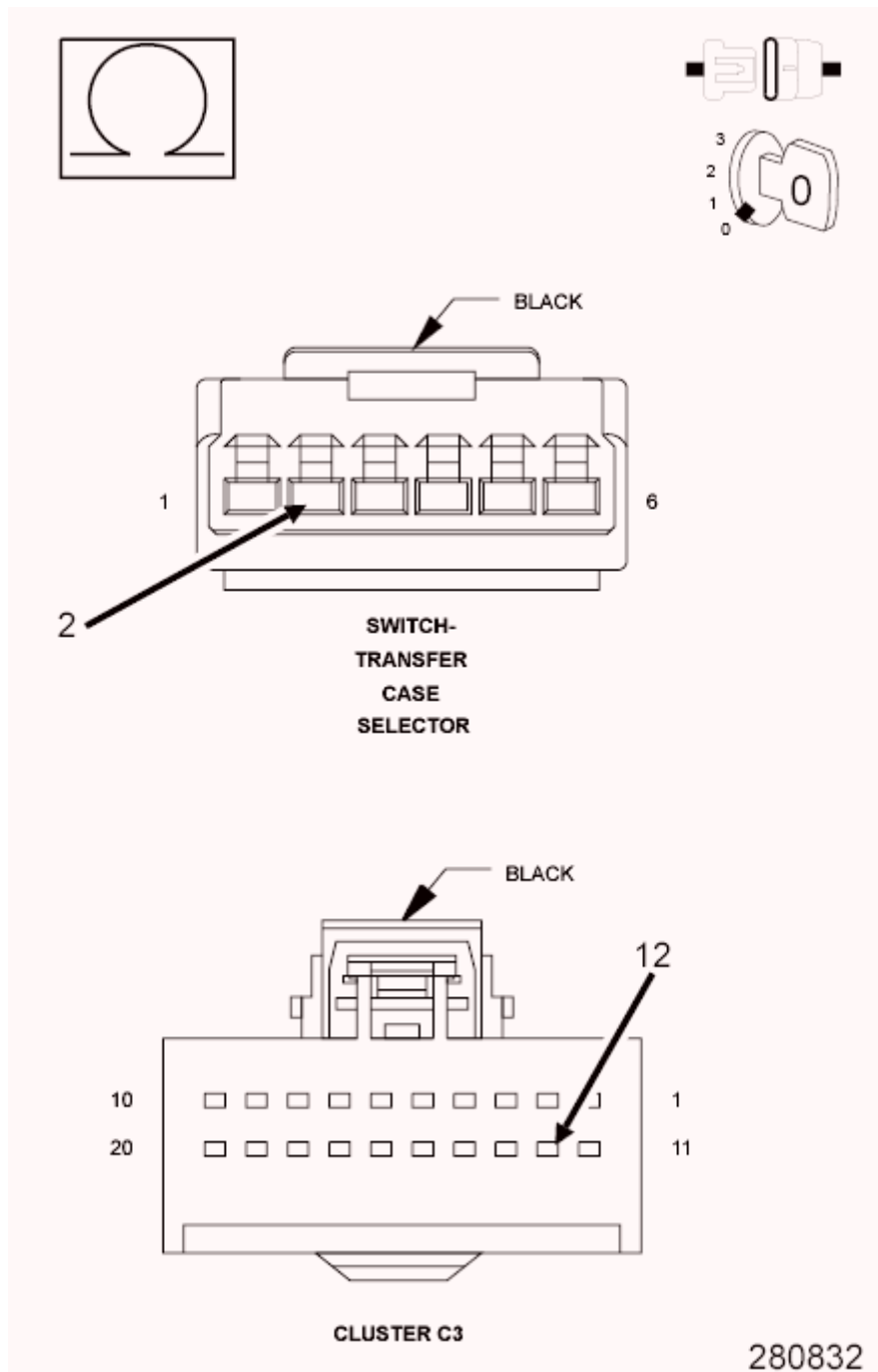


Fig. 24: Checking Transfer Case Position Sensor Input Circuit
 Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off to the lock position.
2. Measure the resistance of the (K77) Transfer Case Position Sensor Input circuit between the Transfer Case Selector Switch harness connector and the CCN C3 harness connector.

Is the resistance greater than 5.0 Ohms?

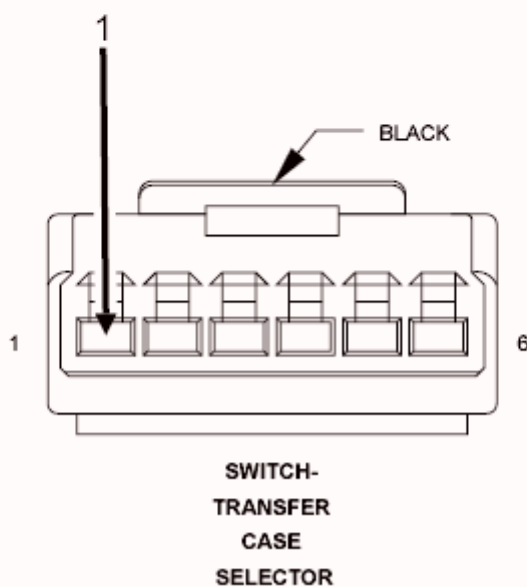
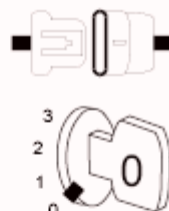
Yes

- Repair the (K77) Transfer Case Position Sensor Input circuit for an open.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Go To 6

6. (Z908) GROUND CIRCUIT OPEN



280834

Fig. 25: Checking Ground Circuit For An Open
Courtesy of CHRYSLER GROUP, LLC

1. Measure the resistance of the (Z908) Ground circuit between the Transfer Case Selector Switch harness connector and the CCN C3 harness connector.

Is the resistance above 5.0 Ohms?

Yes

- Repair the (Z908) Ground circuit for an open.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Replace the All Wheel Drive (AWD) Control Module in accordance with Service Information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

7. INTERMITTENT TRANSFER CASE RANGE SELECT SWITCH PERFORMANCE

1. The conditions necessary to set this DTC are not present at this time.
2. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors.
3. While monitoring the scan tool data relative to this circuit, wiggle test the wiring and connectors.
4. Look for the data to change or for the DTC to reset during the wiggle test.
5. While monitoring the scan tool data relative to this circuit, move the selector switch to each position several times.
6. Look for the data to change other than as expected or for the DTC to reset.

Were any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

No

- Test complete.

C2100-BATTERY VOLTAGE LOW

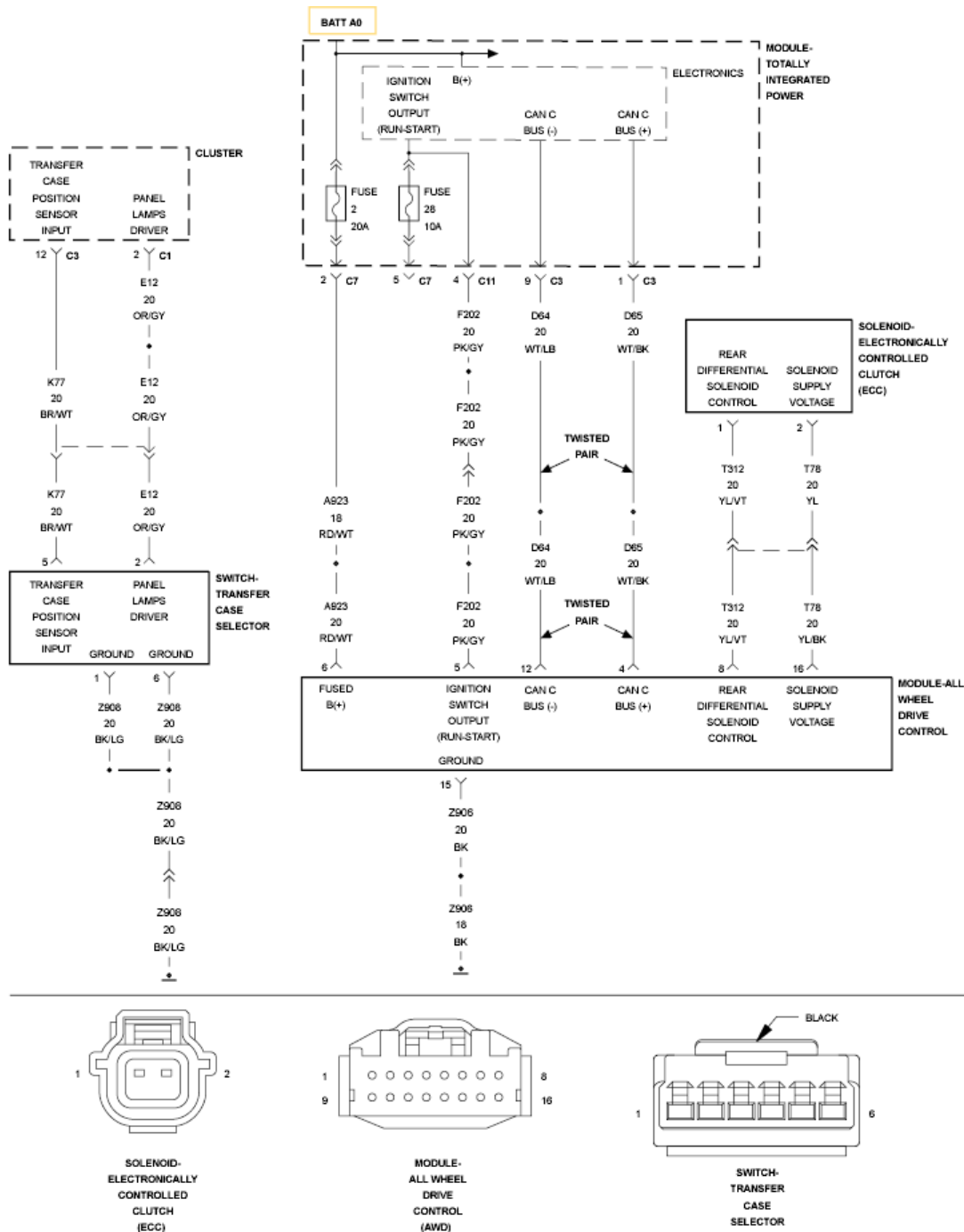


Fig. 26: All Wheel Drive Control Module Circuit Diagram
 Courtesy of CHRYSLER GROUP, LLC

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

Continuously.

SET CONDITION

The All Wheel Drive Control Module (AWD) detects that system voltage is below 8.0 volts for 10 seconds.

POSSIBLE CAUSES

Possible Causes
<p>CHARGING SYSTEM DTCS PRESENT (A923) FUSED B(+) FOR VOLTAGE (F202) IGNITION SWITCH OUTPUT RUN/START FOR VOLTAGE (F202) IGNITION SWITCH OUTPUT (RUN/START) CIRCUIT OPEN OR HIGH RESISTANCE (A923) FUSED B(+) CIRCUIT OPEN OR HIGH RESISTANCE (Z906) GROUND CIRCUIT OPEN OR HIGH RESISTANCE ALL WHEEL DRIVE (AWD) CONTROL MODULE TOTALLY INTEGRATED POWER MODULE (TIPM)</p>

DIAGNOSTIC TEST

1. CHARGING SYSTEM DTCS PRESENT

1. Ignition on, engine not running.
2. With the scan tool, select View DTCs in the Powertrain Control Module.

Are there any Charging System or related voltage DTCs present?

Yes

- Perform the appropriate diagnostic procedure. Refer to the **DTC INDEX** article .

No

- Go To 2

2. VERIFY THE DTC IS ACTIVE

1. Ignition on, engine running. Keep the engine at 1500 rpm for 15 seconds
2. Maintain the engine at 1500 rpm for 15 seconds

3. With the scan tool, select View DTCs.

Is the DTC active at this time?

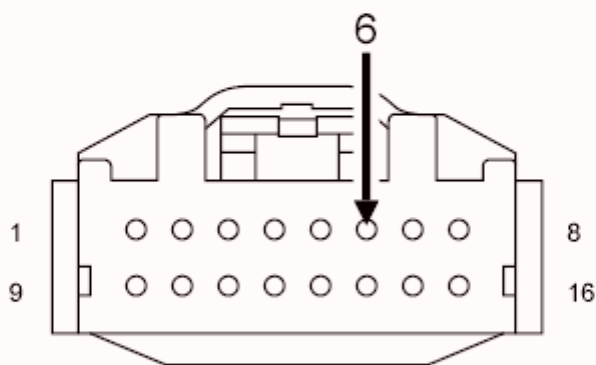
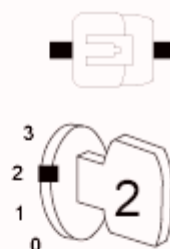
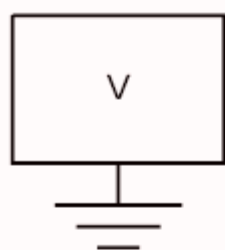
Yes

- Go To 3

No

- Go To 10

3. CHECK THE TIPM (A923) FUSED B(+) VOLTAGE



MODULE-ALL
WHEEL
DRIVE
CONTROL
(AWD)

256814

Fig. 27: Checking TIPM Fused B(+) Voltage
Courtesy of CHRYSLER GROUP, LLC

1. While back probing, measure the voltage of the (A923) Fused B(+) circuit in the TIPM C7 harness connector.

Is the voltage above 9 volts?

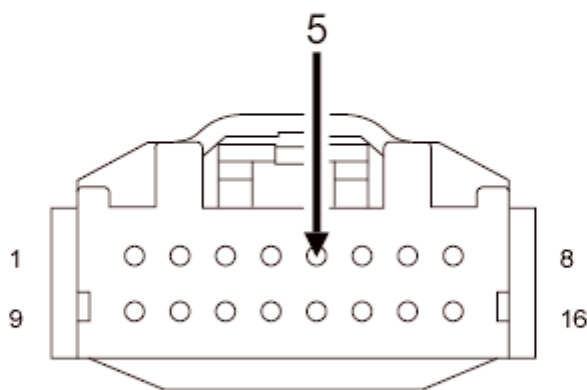
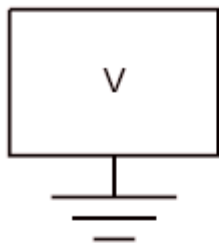
Yes

- Go To 4

No

- Go To 9

**4. CHECK THE TIPM (F202) IGNITION SWITCH OUTPUT
RUN/START VOLTAGE**



MODULE-ALL
WHEEL
DRIVE
CONTROL
(AWD)

256816

Fig. 28: Checking TIPM Ignition Switch Output Run/Start Voltage
Courtesy of CHRYSLER GROUP, LLC

1. While back probing, measure the voltage of the (F202) Ignition Switch Output Run/Start circuit in the TIPM C11 harness connector.

Is the voltage above 8 volts?

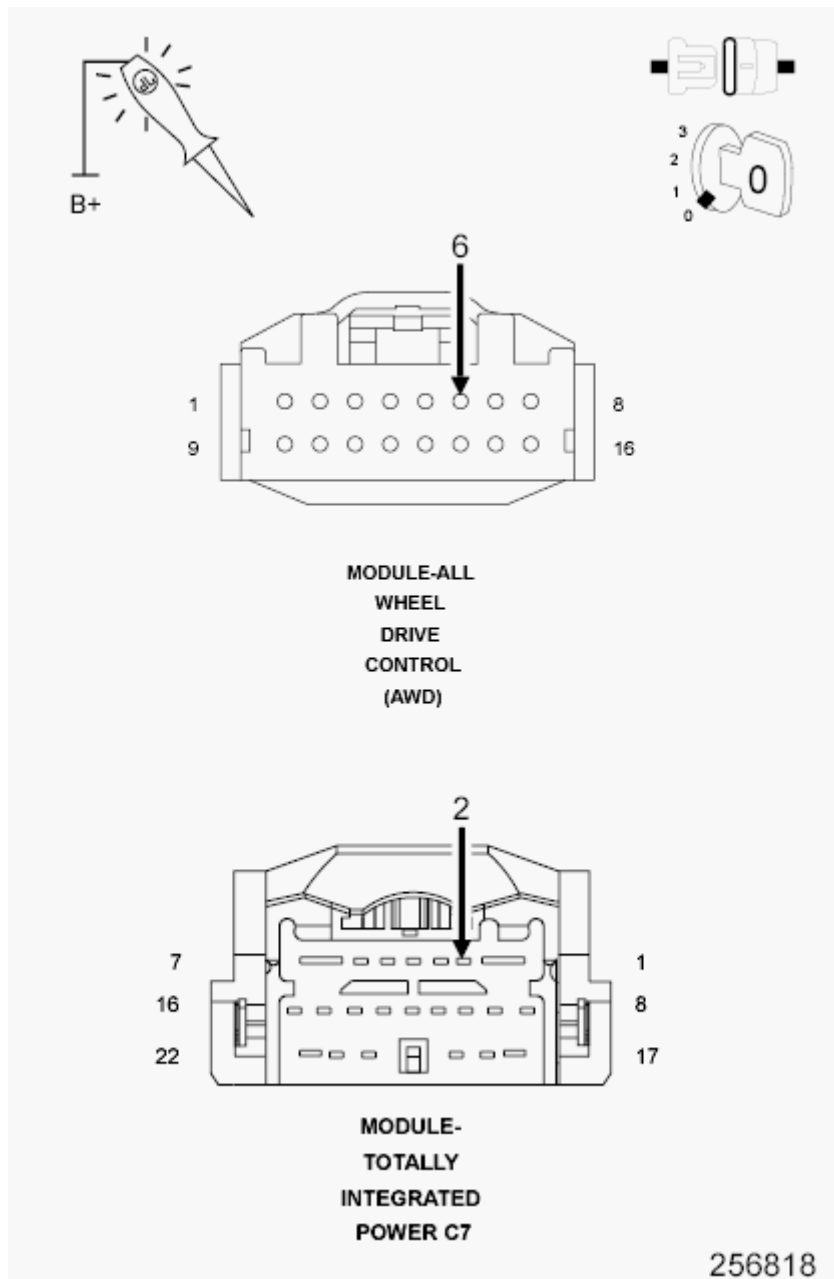
Yes

- Go To 5

No

• Go To 9

5. (A923) FUSED B(+) CIRCUIT OPEN OR HIGH RESISTANCE



256818

Fig. 29: Checking Fused B(+) Circuit For An Open Or High Resistance
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the AWD Module harness connector.
3. Disconnect the TIPM C7 harness connector.
4. Connect a jumper wire between the (A923) Fused B(+) circuit and Ground in the TIPM C7 harness connector.

5. With a 12-volt test light connected to B(+), check the (A923) Fused B (+) circuit in the AWD Control Module harness connector.

NOTE: **The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.**

Does the test light illuminate brightly?

Yes

- Go To 6

No

- Repair the (F202) Ignition Switch Output (RUN/START) circuit for an open circuit or high resistance.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

6. (F202) IGNITION SWITCH OUTPUT (RUN/START) CIRCUIT OPEN OR HIGH RESISTANCE

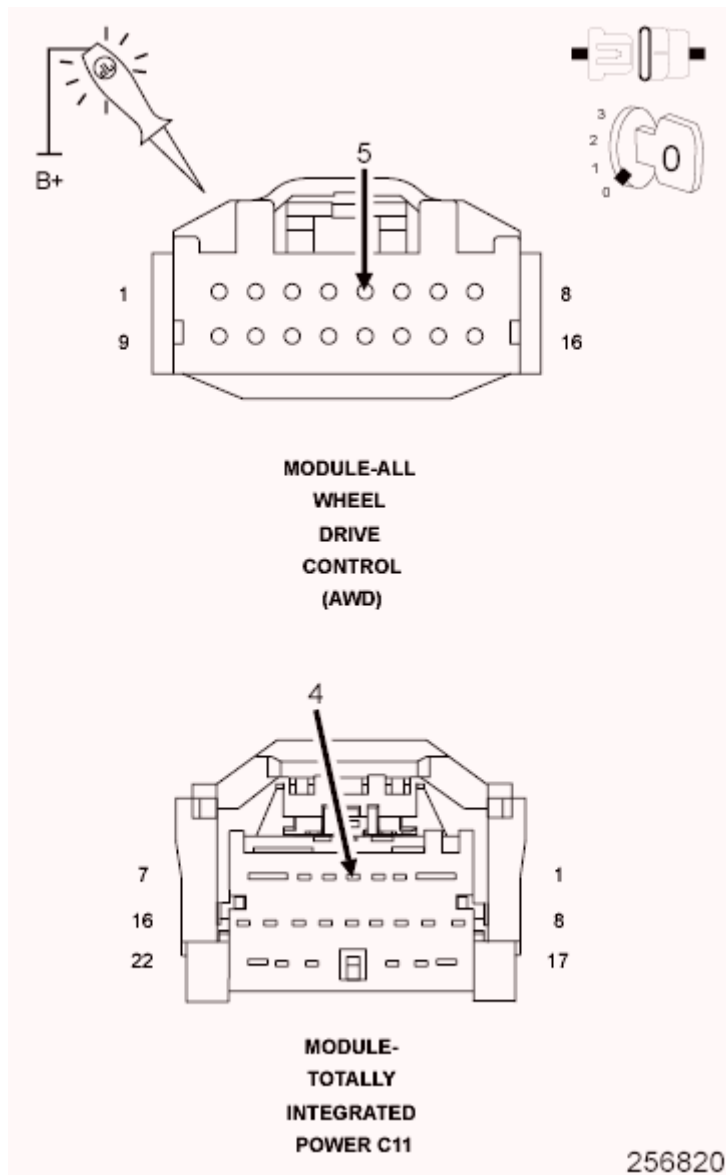


Fig. 30: Checking Ignition Switch Output (Run/Start) Circuit For An Open Or High Resistance

Courtesy of CHRYSLER GROUP, LLC

1. Disconnect the TIPM C11 harness connector.
2. Connect a jumper wire between the (F202) Ignition Switch Output (RUN/START) circuit and ground in the TIPM C11 harness connector.
3. With a 12-volt test light connected to B(+), check the (F202) Ignition Switch Output (RUN/START) circuit in the AWD Control Module harness connector.

NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to

the battery.

Does the test light illuminate brightly?

Yes

- Go To 7

No

- Repair the (F202) Ignition Switch Output (RUN/START) circuit for an open circuit or high resistance.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

7. (Z906) GROUND CIRCUIT OPEN OR HIGH RESISTANCE

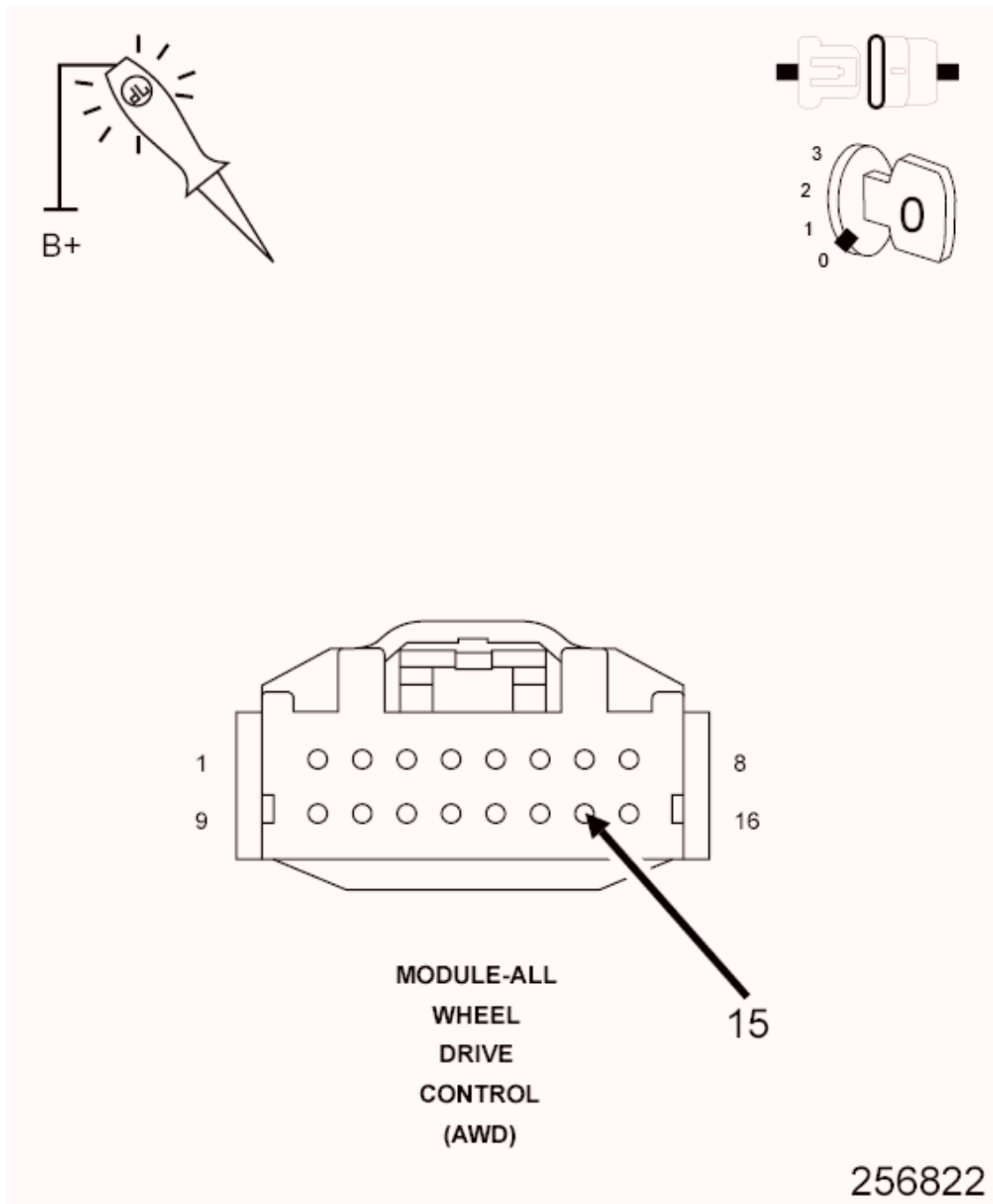


Fig. 31: Checking Ground Circuit For Open or High Resistance
 Courtesy of CHRYSLER GROUP, LLC

1. With a 12-volt test light connected to B(+), check the (Z906) ground circuit in the AWD Control Module harness connector.

NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.

Does the test light illuminate brightly?

Yes

- Go To 8

No

- Repair the (Z906) Ground circuit for an open circuit or high resistance.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

8. AWD CONTROL MODULE

NOTE: Before continuing, check the AWD Module harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors.
2. Pay particular attention to all Power and Ground circuits.

Were any problems found?

Repair

- Replace the All Wheel Drive (AWD) Control Module in accordance with the Service information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

9. TOTALLY INTEGRATED POWER MODULE

NOTE: Before continuing, check the TIPM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors.
2. Pay particular attention to all Power and Ground circuits.

Were any problems found?

Repair

- Replace the Totally Integrated Power Module (TIPM) in accordance with the Service Information.
- Perform the BODY VERIFICATION TEST. Refer to **STANDARD PROCEDURE** .

10. INTERMITTENT WIRING AND CONNECTORS

1. The conditions necessary to set this DTC are not present at this time.
2. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit.
3. Wiggle test the wiring harness and connectors while checking for shorted and open circuits.
4. Using the scan tool, monitor the data related to this circuit while performing the wiggle test. Look for the data to change or for the DTC to reset.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Test Complete.

C2101-BATTERY VOLTAGE HIGH

SET CONDITION

The All Wheel Drive Control Module (AWD) detects that system voltage is above 17.0 volts for more than 10 seconds.

POSSIBLE CAUSES

Possible Causes
<p>CHARGING SYSTEM DTCS PRESENT (F202) IGNITION SWITCH OUTPUT (RUN/START) CIRCUIT FOR VOLTAGE (A923) FUSED B(+) CIRCUIT FOR VOLTAGE ALL WHEEL DRIVE (AWD) CONTROL MODULE TOTALLY INTEGRATED POWER MODULE (TIPM)</p>

DIAGNOSTIC TEST

1. CHARGING SYSTEM DTCS PRESENT

1. Ignition on, engine not running.
2. With the scan tool, select View DTCs in the Powertrain Control Module.

Are there any Charging System or related voltage DTCs present?

Yes

- Perform the appropriate diagnostic procedure. Refer to the **DTC INDEX** article .

No

- Go To 2

2. VERIFY THE DTC IS ACTIVE

NOTE: Leave the ignition on for 15 seconds.

1. With the scan tool, select View DTCs.

Is the DTC active at this time?

Yes

- Go To 3

No

- Go To 7

3. CHECK THE TIPM (A923) FUSED B(+) VOLTAGE

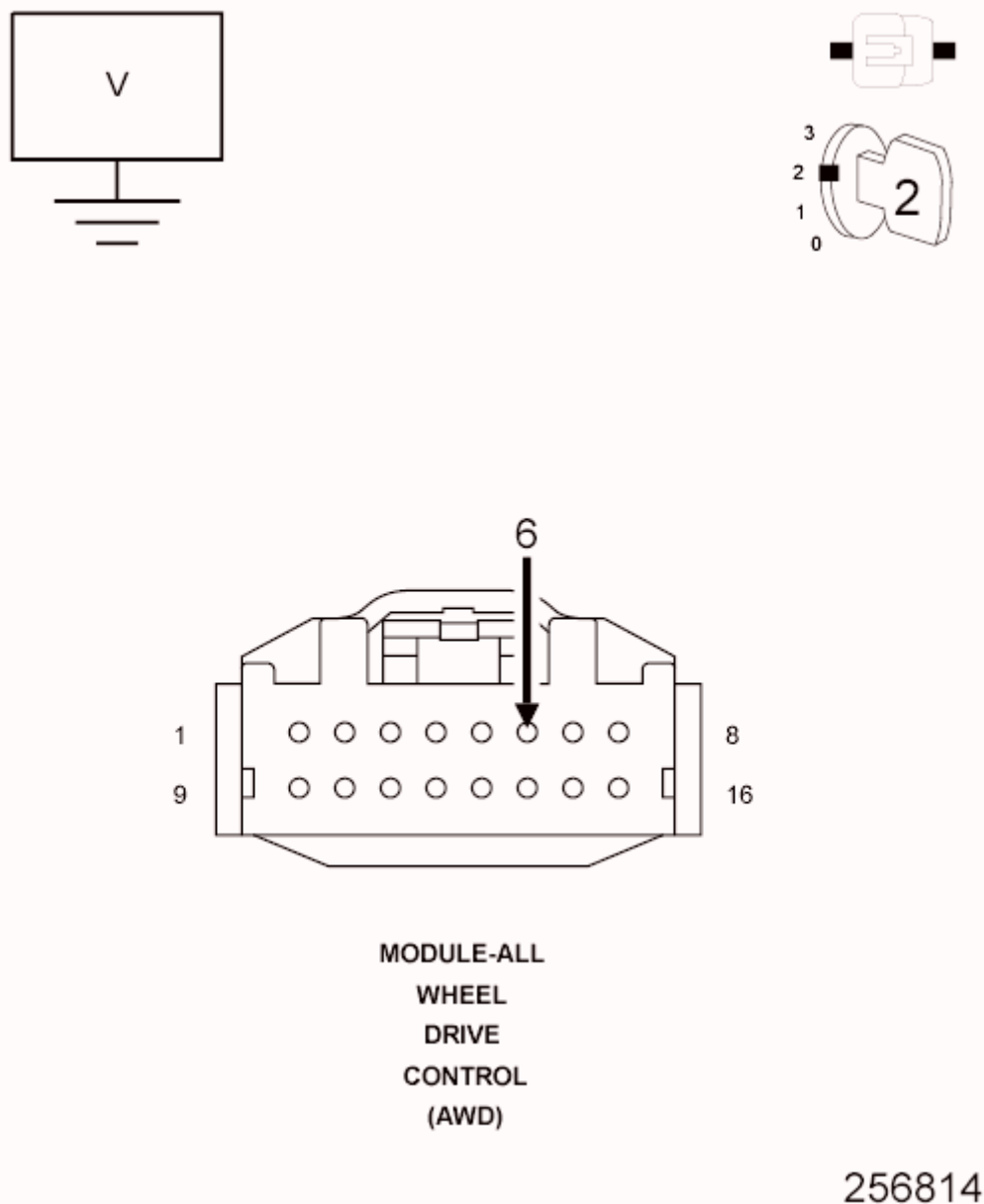


Fig. 33: Checking TIPM Fused B(+) Voltage
 Courtesy of CHRYSLER GROUP, LLC

1. While back probing, measure the voltage of the (A923) Fused B(+) circuit in the TIPM C7 harness connector.

Is the voltage below 17 volts?

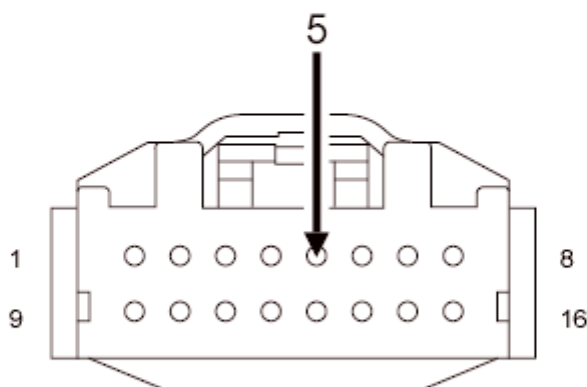
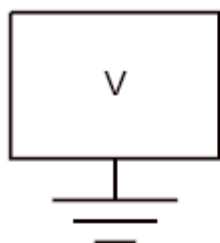
Yes

- Go To 4

No

- Go To 6

4. CHECK THE TIPM (F202) IGNITION SWITCH OUTPUT RUN/START VOLTAGE



MODULE-ALL
WHEEL
DRIVE
CONTROL
(AWD)

256816

Fig. 34: Checking TIPM Ignition Switch Output Run/Start Voltage

Courtesy of CHRYSLER GROUP, LLC

1. While back probing, measure the voltage of the (F202) Ignition Switch Output Run/Start circuit in the TIPM C11 harness connector.

Is the voltage below 17 volts?

Yes

- Go To 5

No

- Go To 6

5. AWD CONTROL MODULE

NOTE: Before continuing, check the AWD Module harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors.
2. Pay particular attention to all Power and Ground circuits.

Were any problems found?

Repair

- Replace the All Wheel Drive Control Module in accordance with the Service information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

6. TOTALLY INTEGRATED POWER MODULE

NOTE: Before continuing, check the TIPM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors.

2. Pay particular attention to all Power and Ground circuits.

Were any problems found?

Repair

- Replace the Totally Integrated Power Module (TIPM) in accordance with the Service Information.
- Perform the BODY VERIFICATION TEST. Refer to **STANDARD PROCEDURE** .

7. INTERMITTENT WIRING AND CONNECTORS

1. The conditions necessary to set this DTC are not present at this time.
2. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit.
3. Wiggle test the wiring harness and connectors while checking for shorted and open circuits.
4. Using the scan tool, monitor the data related to this circuit while performing the wiggle test. Look for the data to change or for the DTC to reset.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Test Complete.

C211C-IGNITION RUN/START INPUT CIRCUIT LOW

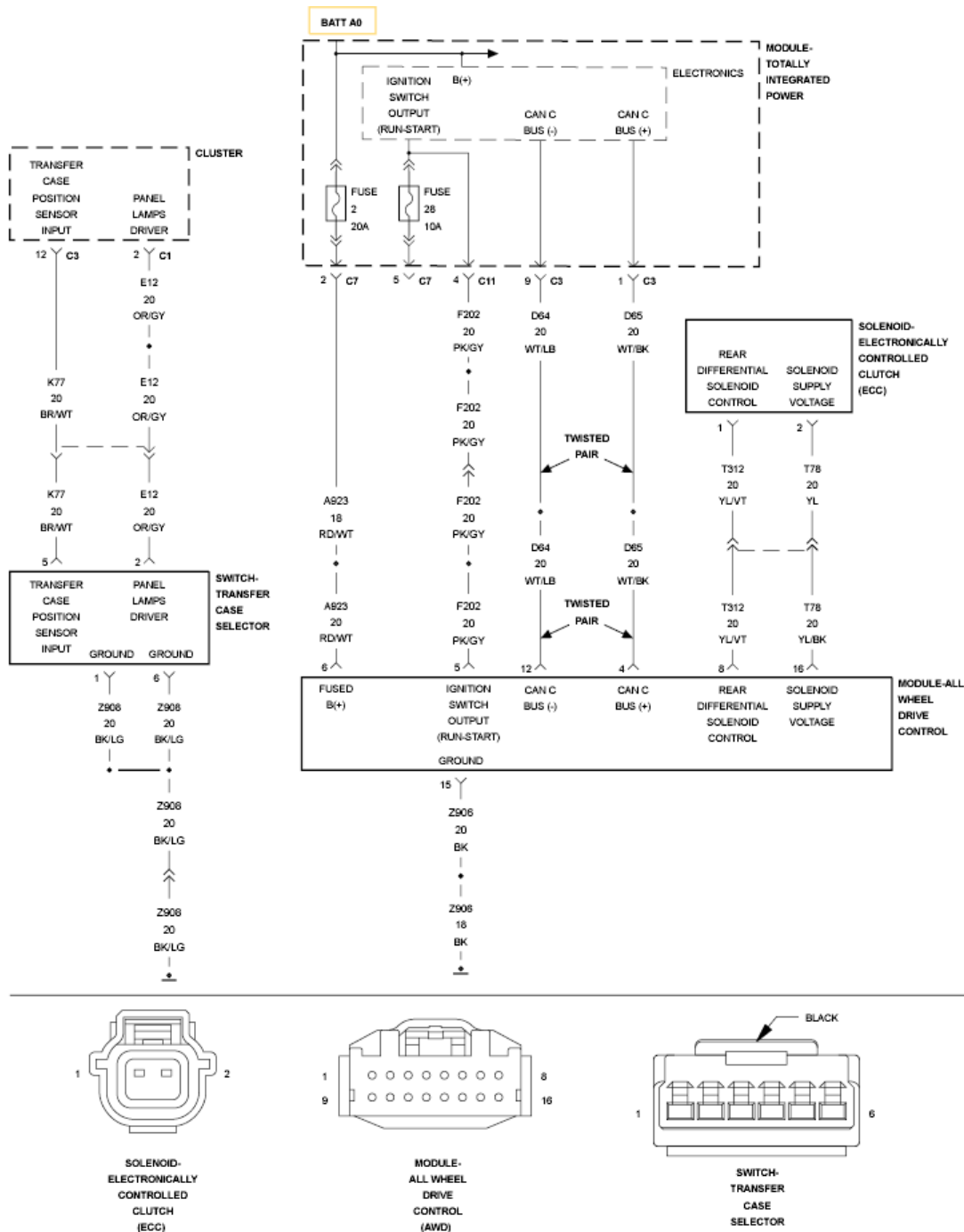


Fig. 35: All Wheel Drive Control Module Circuit Diagram
 Courtesy of CHRYSLER GROUP, LLC

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

With the ignition on.

SET CONDITION

The All Wheel Drive (AWD) Control Module will set this DTC if the Ignition Run/Start circuit voltage is less than the expected value for more than 10 seconds.

POSSIBLE CAUSES**Possible Causes**

(F202) IGNITION SWITCH OUTPUT (RUN/START) CIRCUIT VOLTAGE
(F202) IGNITION SWITCH OUTPUT (RUN/START) CIRCUIT OPEN OR HIGH RESISTANCE
(Z906) GROUND CIRCUIT OPEN OR HIGH RESISTANCE
ALL WHEEL DRIVE (AWD) CONTROL MODULE
TOTALLY INTEGRATED POWER MODULE (TIPM)

DIAGNOSTIC TEST**1. VERIFY THE DTC IS ACTIVE**

1. Ignition on, engine not running.
2. With the scan tool, read the active DTC.
3. Cycle the ignition switch from off to on, leaving the ignition on for a minimum of 10 seconds.
4. With the scan tool, read the active DTC.

Is the DTC active at this time?

Yes

- Go To 2

No

- Go To 7

2. (F202) IGNITION SWITCH OUTPUT (RUN/START) VOLTAGE

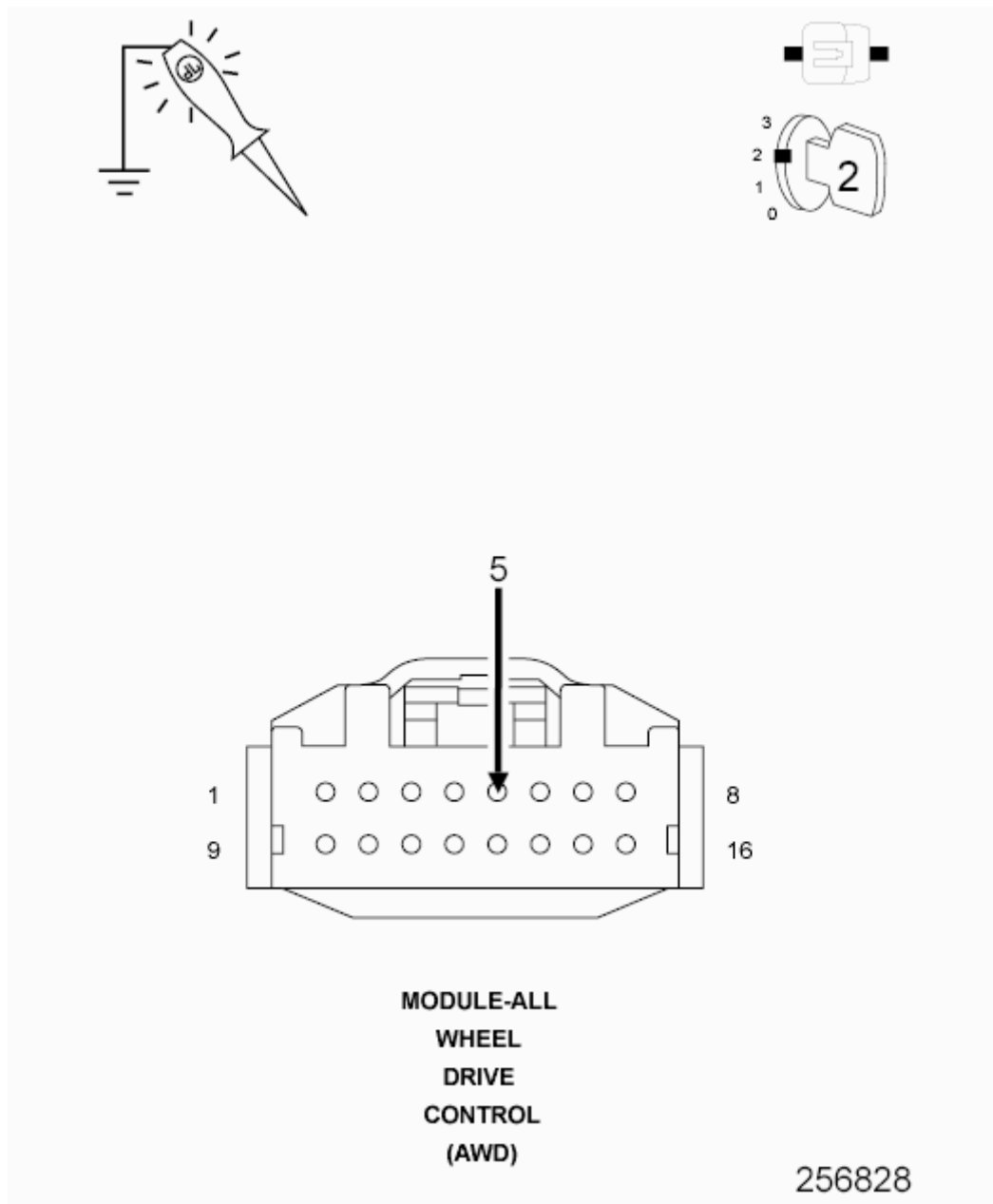


Fig. 36: Checking Ignition Switch Output (Run/Start)
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the AWD Control Module harness connector.
3. Ignition on, engine not running.
4. With a 12-volt test light connected to ground, check the (F202) Ignition Switch Output (RUN/START) circuit in the AWD Control Module harness connector.

NOTE: The test light must illuminate brightly. Compare

the brightness to that of a direct connection to the battery.

Does the test light illuminate brightly?

Yes

- Go To 3

No

- Go To 4

3. (Z906) GROUND CIRCUIT OPEN OR HIGH RESISTANCE

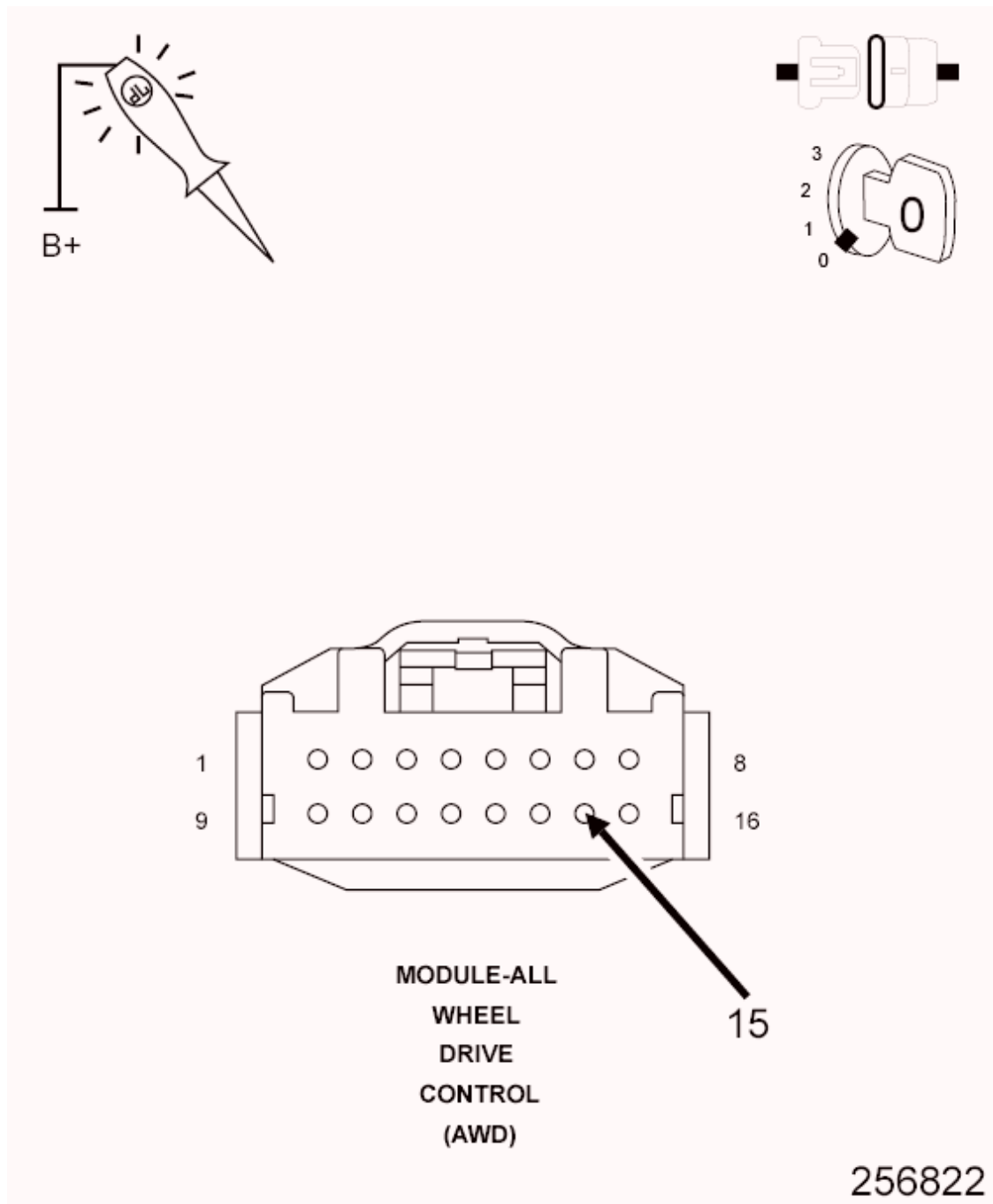


Fig. 37: Checking Ground Circuit For Open or High Resistance
 Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the AWD Control Module harness connector.
3. With a 12-volt test light connected to B+, check the (Z906) Ground circuit in the AWD Control Module harness connector.

NOTE: The test light must illuminate brightly. Compare

the brightness to that of a direct connection to the battery.

Does the test light illuminate brightly?

Yes

- Go To 5

No

- Repair the (Z906) Ground circuit for an open circuit or high resistance.
- Perform the AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

**4. (F202) IGNITION SWITCH OUTPUT (RUN/START) CIRCUIT
OPEN OR HIGH RESISTANCE**

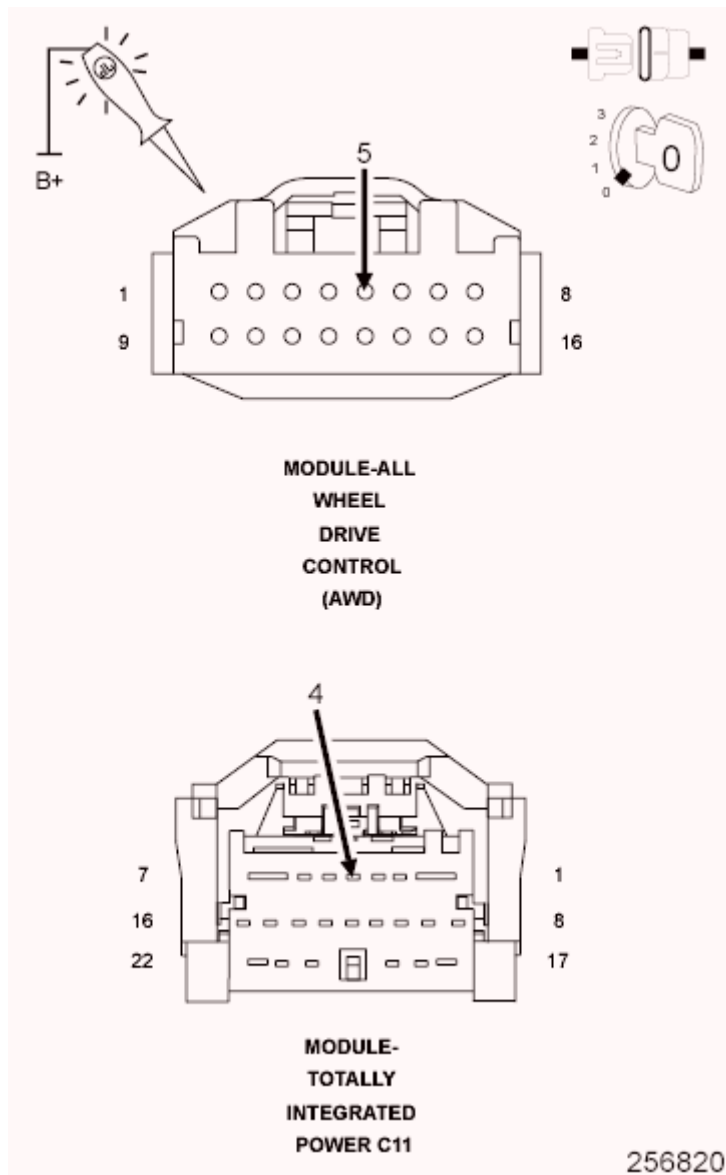


Fig. 38: Checking Ignition Switch Output (Run/Start) Circuit For An Open Or High Resistance

Courtesy of CHRYSLER GROUP, LLC

1. Disconnect the TIPM C11 harness connector.
2. Connect a jumper wire between the (F202) Ignition Switch Output (RUN/START) circuit and B(+) in the TIPM C11 harness connector.
3. With a 12-volt test light connected to ground, check the (F202) Ignition Switch Output (RUN/START) circuit in the AWD Control Module harness connector.

NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to

the battery.

Does the test light illuminate brightly?

Yes

- Go To 6

No

- Repair the (F202) Ignition Switch Output (RUN/START) circuit for an open circuit or high resistance.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

5. AWD CONTROL MODULE

NOTE: Before continuing, check the AWD Module harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors.
2. Pay particular attention to all Power and Ground circuits.

Repair

- Replace the All Wheel Drive (AWD) Control Module in accordance with the Service information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

6. TOTALLY INTEGRATED POWER MODULE

NOTE: Before continuing, check the TIPM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and

connectors.

2. Pay particular attention to all Power and Ground circuits.

Were any problems found?

Repair

- Replace the Totally Integrated Power Module in accordance with the Service Information.
- Perform the BODY VERIFICATION TEST. Refer to **STANDARD PROCEDURE** .

7. INTERMITTENT WIRING AND CONNECTORS

1. The conditions necessary to set this DTC are not present at this time.
2. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit.
3. Wiggle test the wiring harness and connectors while checking for shorted and open circuits.
4. Using the scan tool, monitor the data related to this circuit while performing the wiggle test. Look for the data to change or for the DTC to reset.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Test Complete.

C211D-IGNITION RUN/START INPUT CIRCUIT HIGH

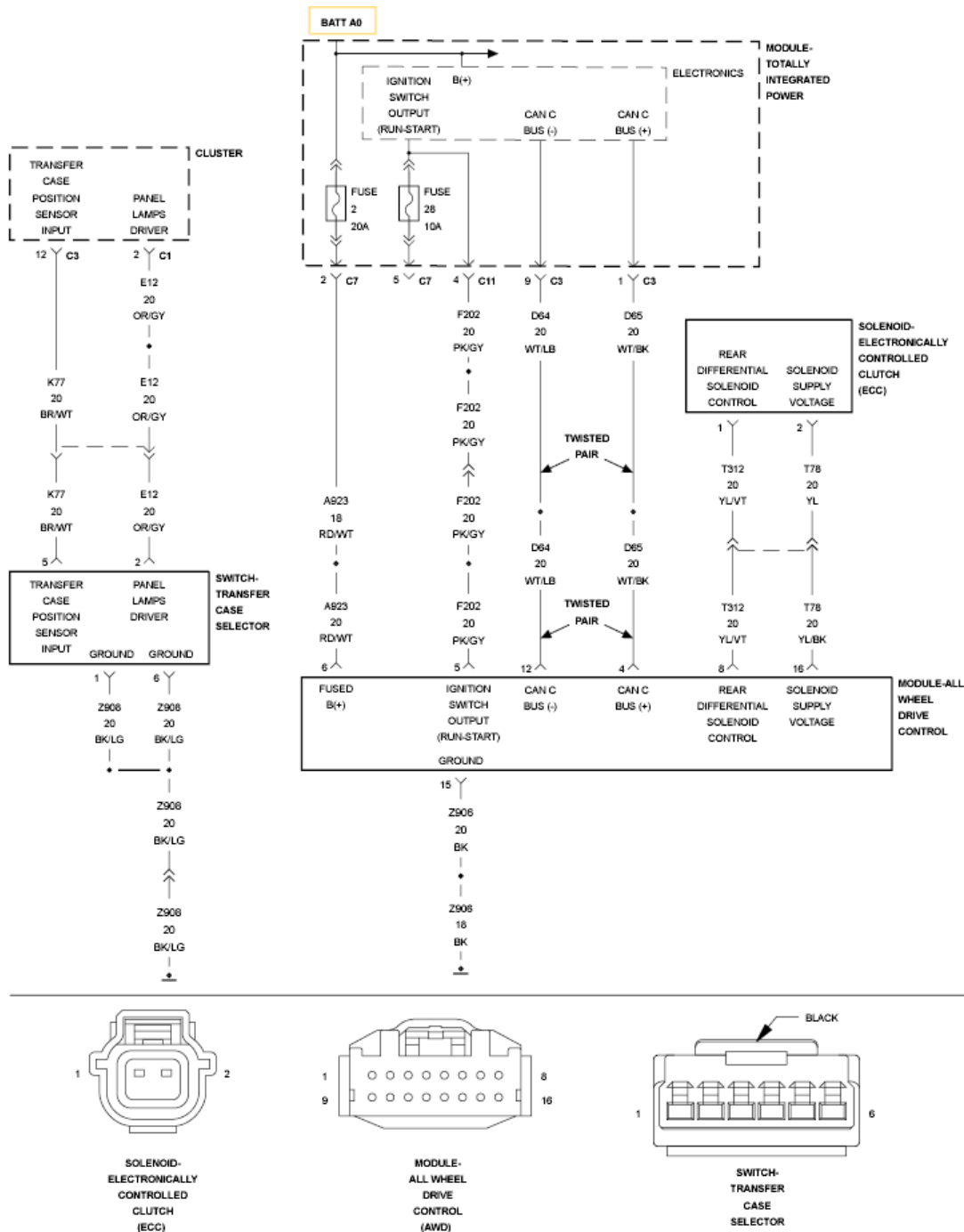


Fig. 39: All Wheel Drive Control Module Circuit Diagram
 Courtesy of CHRYSLER GROUP, LLC

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

Continuously.

SET CONDITION

The All Wheel Drive (AWD) Control Module detects that the ignition Switch circuit voltage is above 17.0 volts for more than 10 seconds.

POSSIBLE CAUSES

Possible Causes
(F202) IGNITION SWITCH OUTPUT (RUN/START) VOLTAGE (F202) IGNITION SWITCH OUTPUT (RUN/START) CIRCUIT OPEN OR HIGH RESISTANCE ALL WHEEL DRIVE (AWD) CONTROL MODULE TOTALLY INTEGRATED POWER MODULE (TIPM)

DIAGNOSTIC TEST

1. CHARGING SYSTEM DTCS PRESENT

1. Ignition on, engine not running.
2. With the scan tool, select View DTCs in the Powertrain Control Module.

Are there any Charging System or related voltage DTCs present?

Yes

- Perform the appropriate diagnostic procedure. Refer to the **DTC INDEX** article .

No

- Go To 2

2. VERIFY THE DTC IS ACTIVE

1. Ignition on, engine not running.
2. With the scan tool, read the DTCs.
3. Cycle the ignition switch from the OFF to ON position, leaving the ignition on for a minimum of 10 seconds.
4. With the scan tool, read the DTCs.

Is the DTC active at this time?

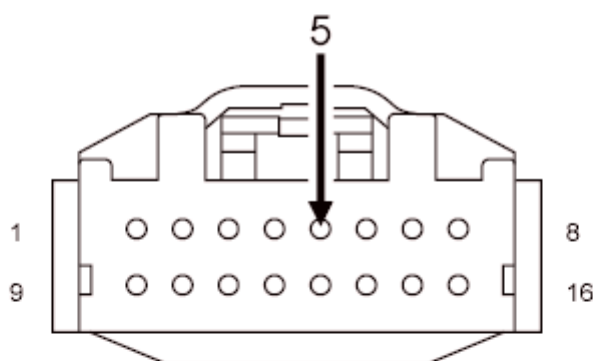
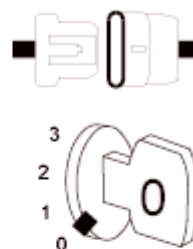
Yes

- Go To 3

No

- Go To 8

3. (F202) IGNITION SWITCH OUTPUT (RUN/START) CIRCUIT SHORTED TO VOLTAGE



MODULE-ALL
WHEEL
DRIVE
CONTROL
(AWD)

256834

Fig. 40: Checking Ignition Switch Output (Run/Start) Circuit For A Short To Voltage

Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the TIPM C11 harness connector.
3. Disconnect the AWD Control Module harness connector.
4. With a 12-volt test light connected to ground, check the (F202) Ignition Switch Output (RUN/START) circuit in the AWD Control Module harness connector.

NOTE: **The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.**

Does the test light illuminate brightly?

Yes

- Repair the (F202) Ignition Switch Output (RUN/START) circuit for a short to voltage.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

Go To 4

4. (F202) IGNITION SWITCH OUTPUT (RUN/START)

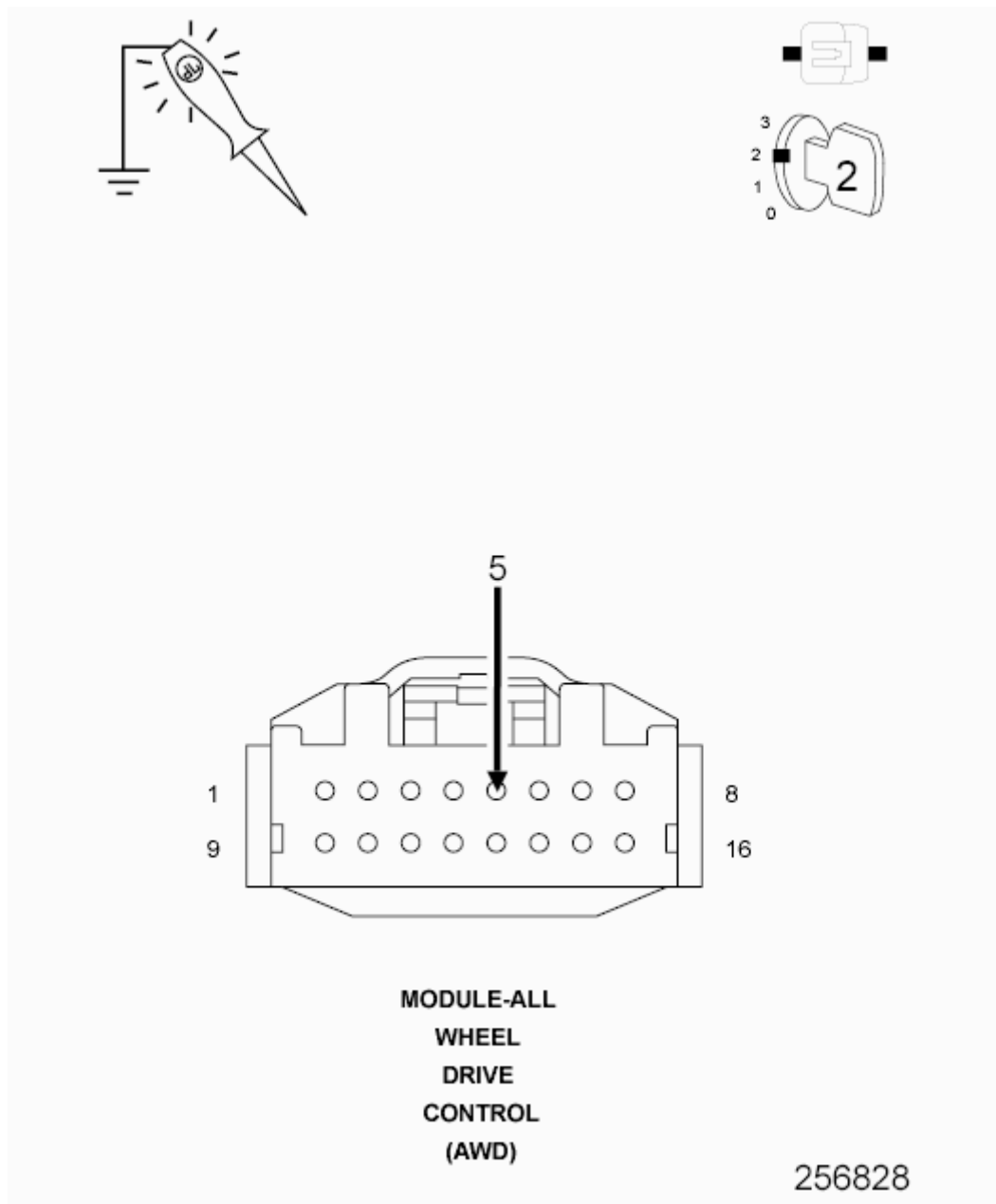


Fig. 41: Checking Ignition Switch Output (Run/Start)
Courtesy of CHRYSLER GROUP, LLC

1. Reconnect the AWD Control Module harness connector.
2. Reconnect the TIPM C11 harness connector.
3. Ignition on, engine not running.
4. With a 12-volt test light connected to ground, check the (F202) Ignition Switch Output (RUN/START) circuit in the AWD Control Module harness connector.

NOTE: The test light must illuminate brightly. Compare

the brightness to that of a direct connection to the battery.

Does the test light illuminate brightly?

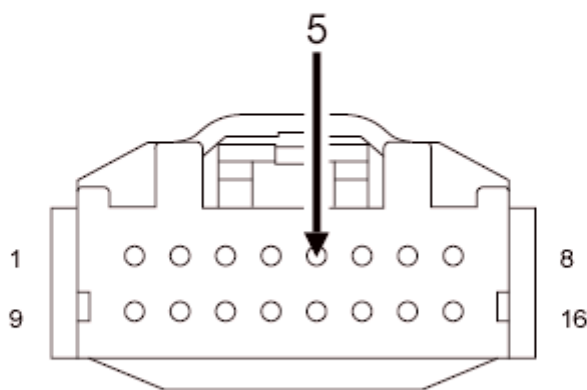
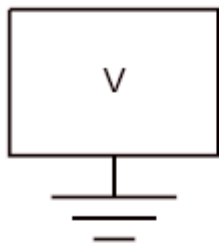
Yes

- Go To 7

No

- Go To 5

5. CHECK THE TIPM (F202) IGNITION SWITCH OUTPUT (RUN/START) VOLTAGE



MODULE-ALL
WHEEL
DRIVE
CONTROL
(AWD)

256816

Fig. 42: Checking TIPM Ignition Switch Output Run/Start Voltage
Courtesy of CHRYSLER GROUP, LLC

1. While back probing, measure the voltage of the (F202) Ignition Switch Output Run/Start circuit in the TIPM C7 harness connector.

Is the voltage below 17 volts?

Yes

- Go To 7

No

- Go To 6

6. AWD CONTROL MODULE

NOTE: Before continuing, check the AWD Module harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors.
2. Pay particular attention to all Power and Ground circuits.

View repair.

Repair

- Replace the All Wheel Drive (AWD) Control Module in accordance with the Service information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

7. TOTALLY INTEGRATED POWER MODULE

NOTE: Before continuing, check the TIPM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors.
2. Pay particular attention to all Power and Ground circuits.

View repair.

Repair

- Replace the Totally Integrated Power Module in accordance with the Service Information.
- Perform the BODY VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

8. INTERMITTENT WIRING AND CONNECTORS

1. The conditions necessary to set this DTC are not present at this time.
2. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit.
3. Wiggle test the wiring harness and connectors while checking for shorted and open circuits.
4. Using the scan tool, monitor the data related to this circuit while performing the wiggle test. Look for the data to change or for the DTC to reset.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Test Complete.

C211E-BATTERY SUPPLY VOLTAGE LOW

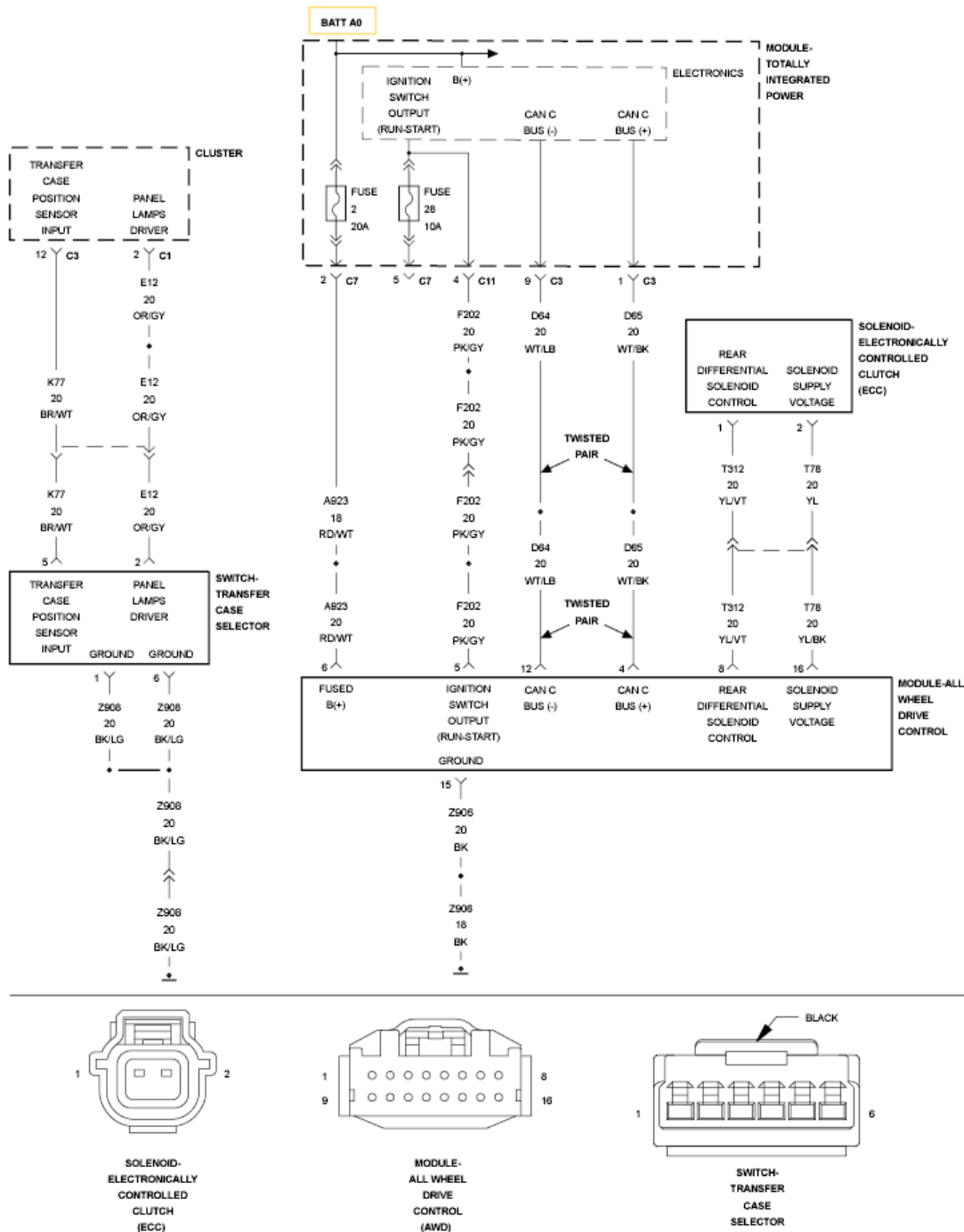


Fig. 43: All Wheel Drive Control Module Circuit Diagram
 Courtesy of CHRYSLER GROUP, LLC

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

Continuously.

SET CONDITION

The All Wheel Drive (AWD) Control Module detects that the Fused Battery (+) circuit voltage is below 2.0 volts for more than 1 second.

POSSIBLE CAUSES

Possible Causes
CHARGING SYSTEM DTCS PRESENT (A923) FUSED B+ CIRCUIT VOLTAGE (A923) FUSED B+ CIRCUIT OPEN OR HIGH RESISTANCE (Z906) GROUND CIRCUIT OPEN OR HIGH RESISTANCE ALL WHEEL DRIVE (AWD) CONTROL MODULE TOTALLY INTEGRATED POWER MODULE (TIPM)

DIAGNOSTIC TEST**1. CHARGING SYSTEM DTCS PRESENT**

1. Ignition on, engine not running.
2. With the scan tool, select View DTCs in the Powertrain Control Module.

Are there any Charging System or related voltage DTCs present?

Yes

- Perform the appropriate diagnostic procedure. Refer to the **DTC INDEX** article .

No

- Go To 2

2. VERIFY THE DTC IS ACTIVE

NOTE: Leave the ignition on for 2 seconds.

1. With the scan tool, read DTCs.

Is the DTC active at this time?

Yes

- Go To 3

No

- Go To 8

3. CHECK THE TIPM (A923) FUSED B+ VOLTAGE

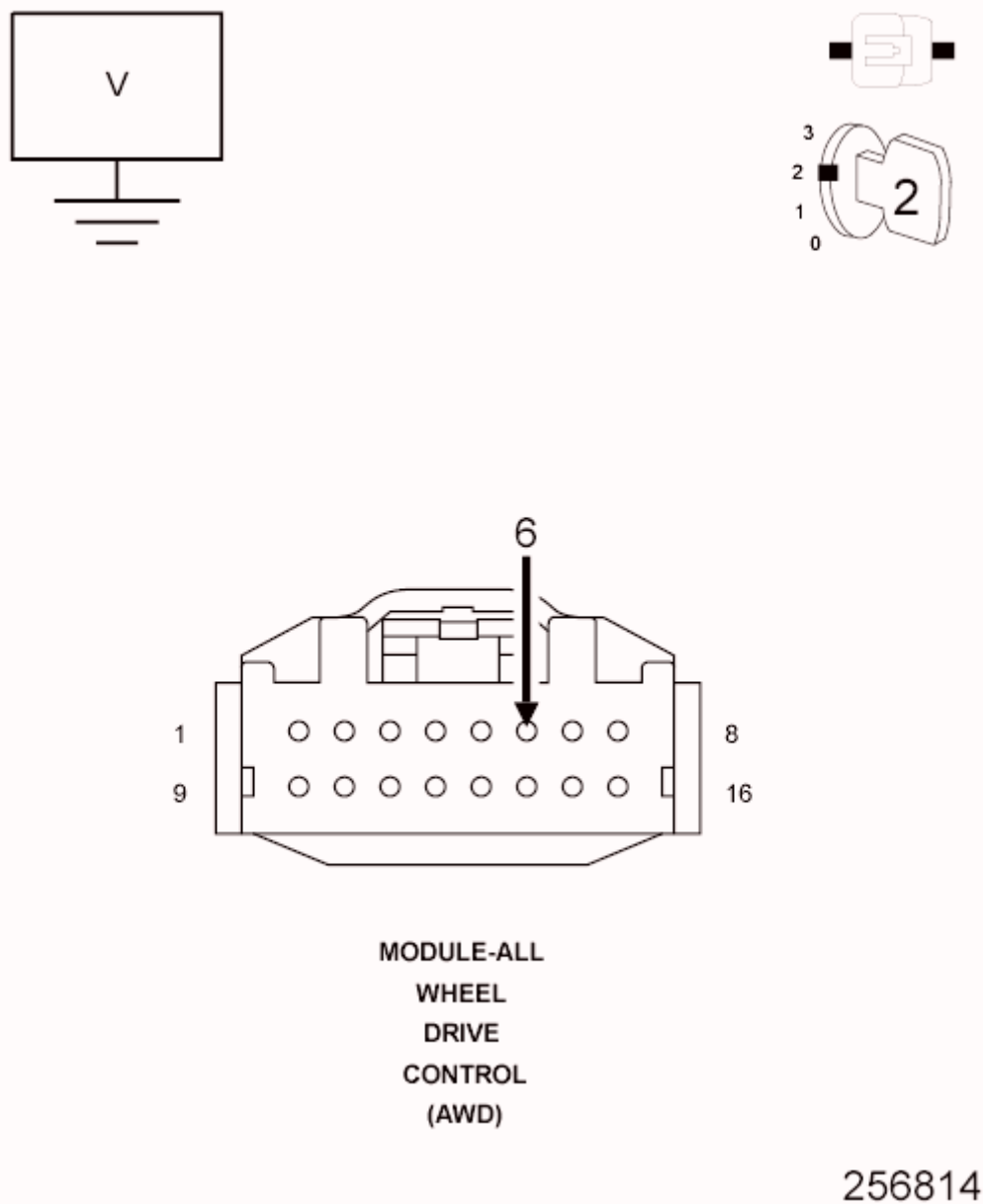


Fig. 44: Checking TIPM Fused B(+) Voltage
Courtesy of CHRYSLER GROUP, LLC

1. While back probing, measure the voltage of the (A923) Fused B+ circuit in the TIPM C7 harness connector.

Is the voltage below 2 volts?

Yes

- Go To 7

No

- Go To 4

4. (A923) FUSED B+ CIRCUIT OPEN OR HIGH RESISTANCE

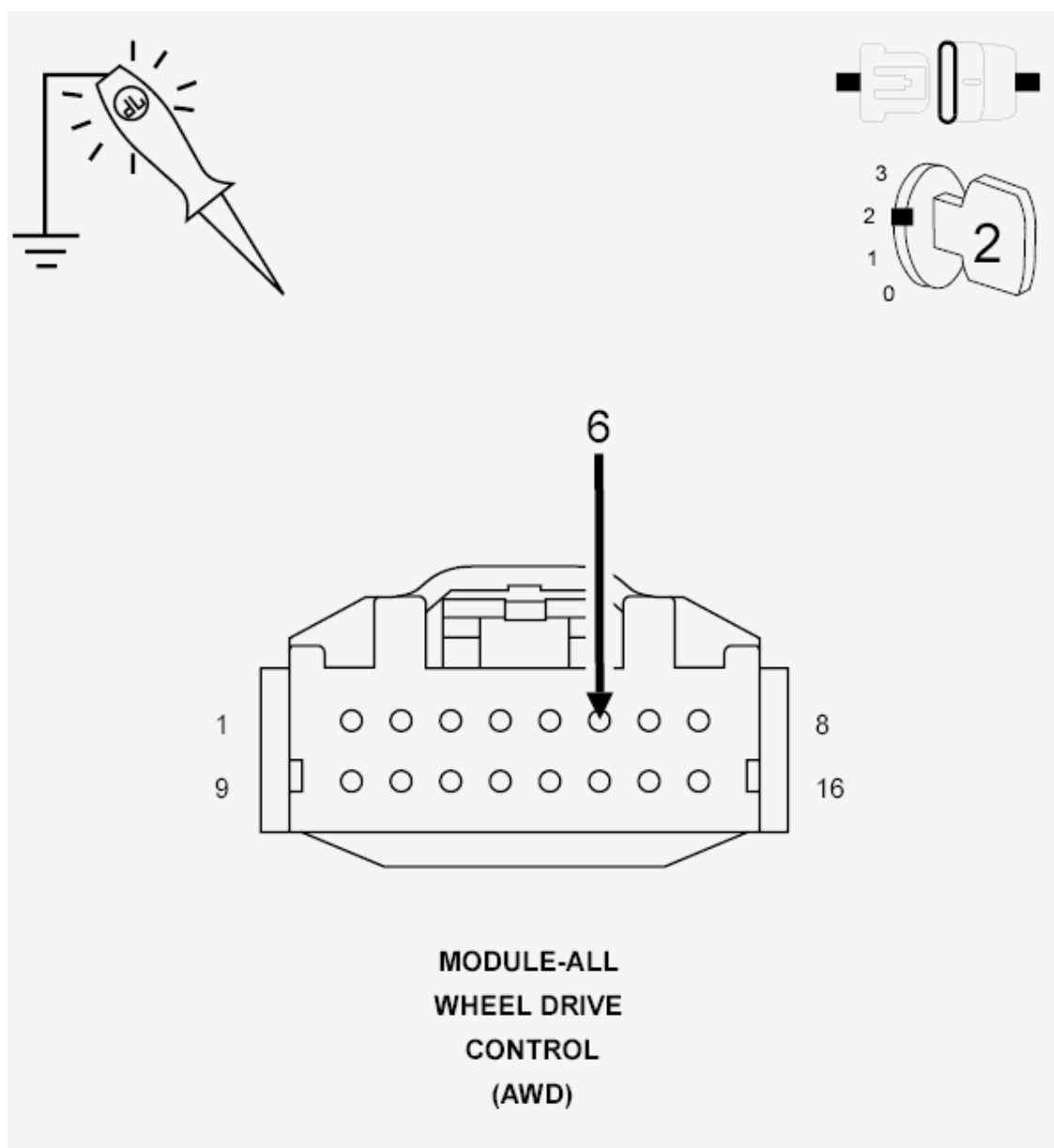


Fig. 45: Checking Fused B+ Circuit For Open Or High Resistance
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the AWD module harness connector.
3. Ignition on, engine not running.
4. With a 12-volt test light connected to ground, check the (A923) Fused B(+) circuit in the AWD Control Module harness connector.

NOTE: **The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.**

Does the test light illuminate brightly?

Yes

- Go To 5

No

- Repair the (A923) Fused B+ circuit for an open circuit or high resistance.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

5. (Z906) GROUND CIRCUIT OPEN OR HIGH RESISTANCE

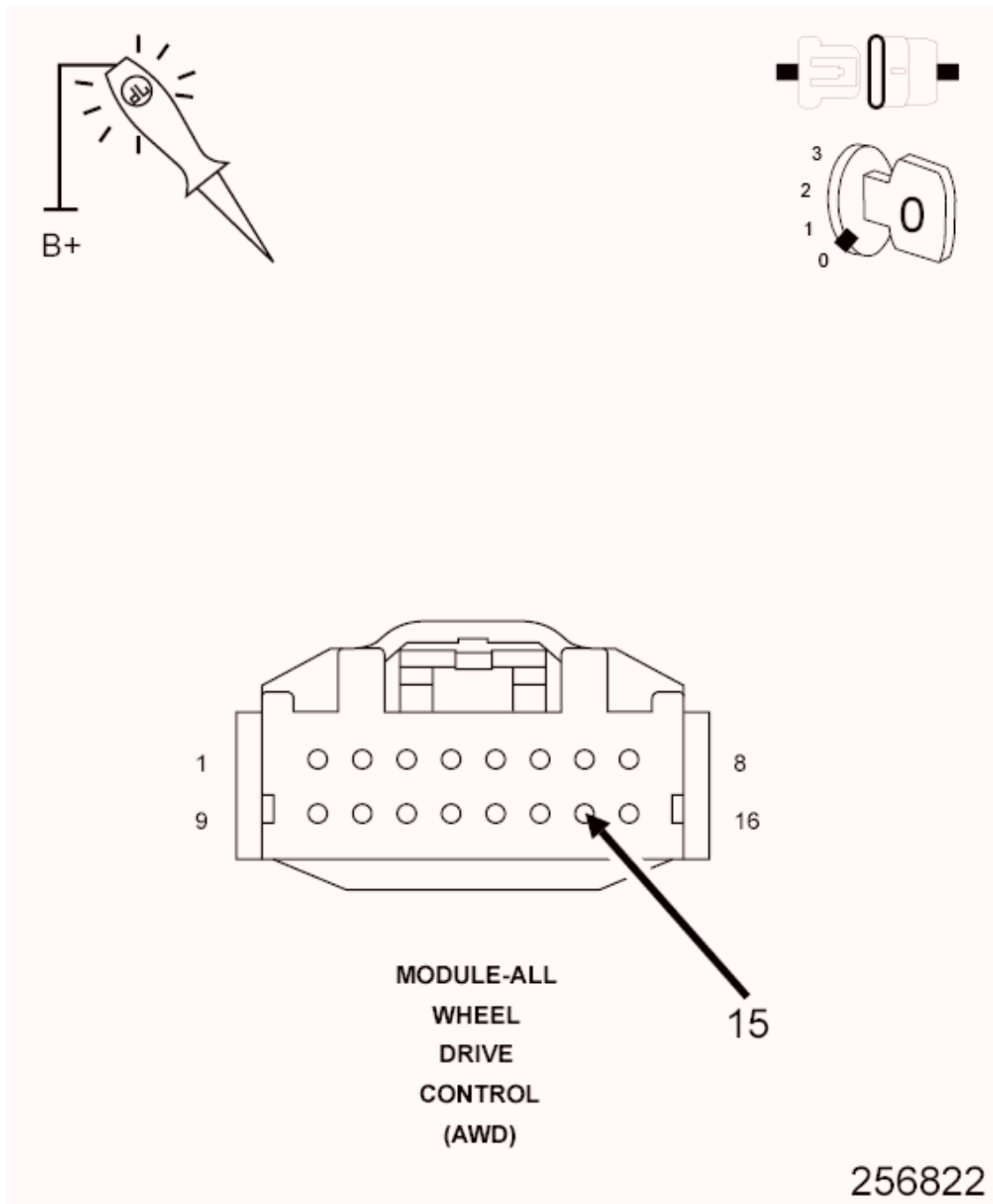


Fig. 46: Checking Ground Circuit For Open or High Resistance
Courtesy of CHRYSLER GROUP, LLC

1. Using a 12-volt test light connected to B(+), check the (Z906) Ground circuit in the AWD Control Module harness connector.

NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery.

Does the test light illuminate brightly?

Yes

- Go To 6

No

- Repair the (Z906) Ground circuit for an open circuit or high resistance.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

6. AWD CONTROL MODULE

NOTE: Before continuing, check the AWD Module harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors.
2. Pay particular attention to all Power and Ground circuits.

View repair.

Repair

- Replace the All Wheel Drive (AWD) Control Module in accordance with the Service information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

7. TOTALLY INTEGRATED POWER MODULE

NOTE: Before continuing, check the TIPM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors.
2. Pay particular attention to all Power and Ground circuits.

View repair.

Repair

- Replace the Totally Integrated Power Module in accordance with the Service Information.
- Perform the BODY VERIFICATION TEST. Refer to **STANDARD PROCEDURE** .

8. INTERMITTENT WIRING AND CONNECTORS

1. The conditions necessary to set this DTC are not present at this time.
2. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit.
3. Wiggle test the wiring harness and connectors while checking for shorted and open circuits.
4. Using the scan tool, monitor the data related to this circuit while performing the wiggle test. Look for the data to change or for the DTC to reset.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Test Complete.

C211F-BATTERY SUPPLY VOLTAGE HIGH

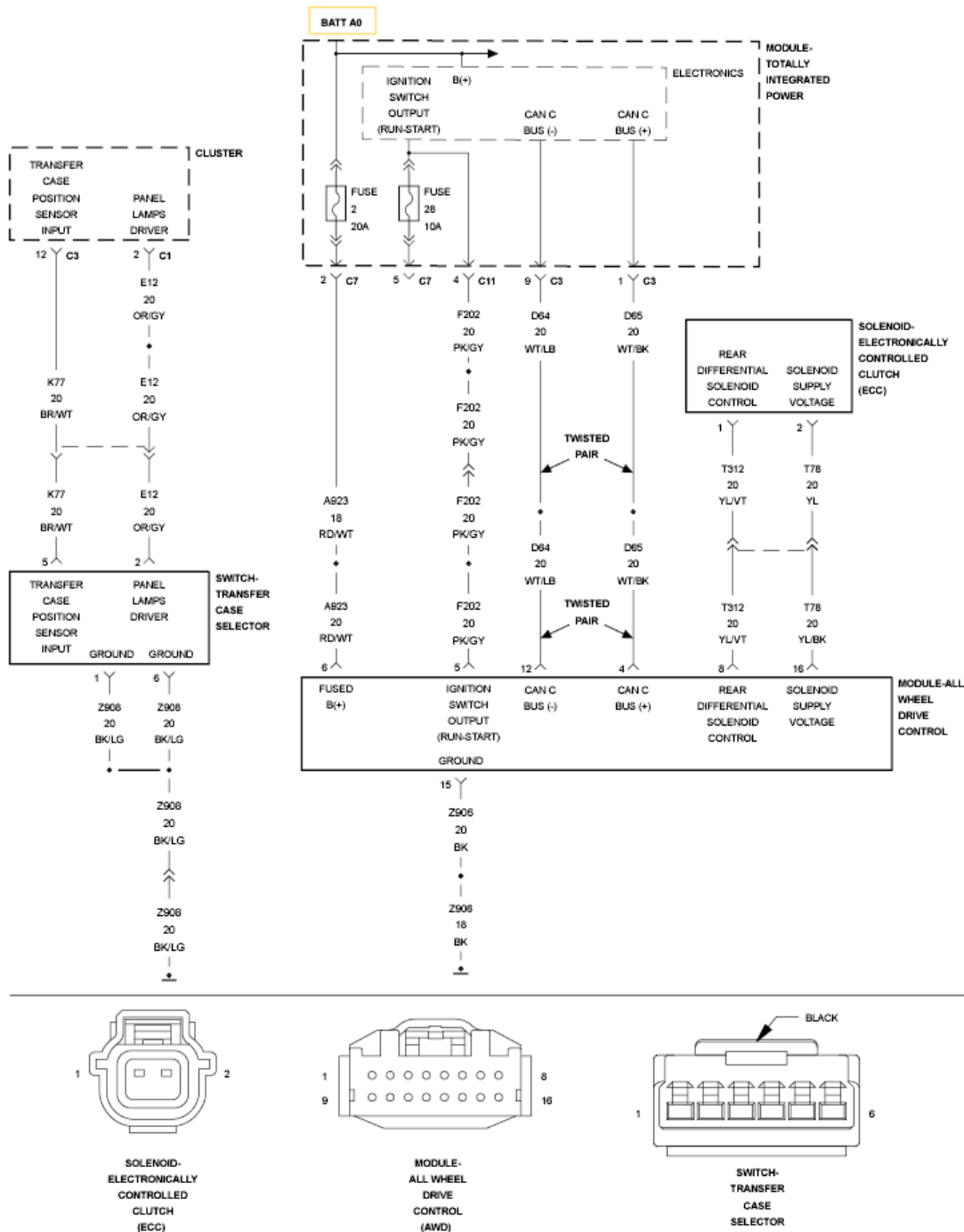


Fig. 47: All Wheel Drive Control Module Circuit Diagram
 Courtesy of CHRYSLER GROUP, LLC

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

Continuously.

SET CONDITION

The All Wheel Drive (AWD) Control Module detects that the Fused Battery (+) circuit voltage is above 17.0 volts for more than 10 seconds.

POSSIBLE CAUSES

Possible Causes
(A923) FUSED B+ CIRCUIT VOLTAGE CHARGING SYSTEM DTCS PRESENT ALL WHEEL DRIVE (AWD) CONTROL MODULE TOTALLY INTEGRATED POWER MODULE (TIPM)

DIAGNOSTIC TEST**1. CHARGING SYSTEM DTCS PRESENT**

1. Ignition on, engine not running.
2. With the scan tool, select View DTCs in the Powertrain Control Module.

Are there any Charging System or related voltage DTCs present?

Yes

- Perform the appropriate diagnostic procedure. Refer to the **DTC INDEX** article .

No

- Go To 2

2. VERIFY THE DTC IS ACTIVE

NOTE: Leave the ignition on for 15 seconds.

1. With the scan tool, select View DTCs.

Is the DTC active at this time?

Yes

- Go To 3

No

- Go To 6

3. CHECK THE TIPM (A923) FUSED B+ VOLTAGE

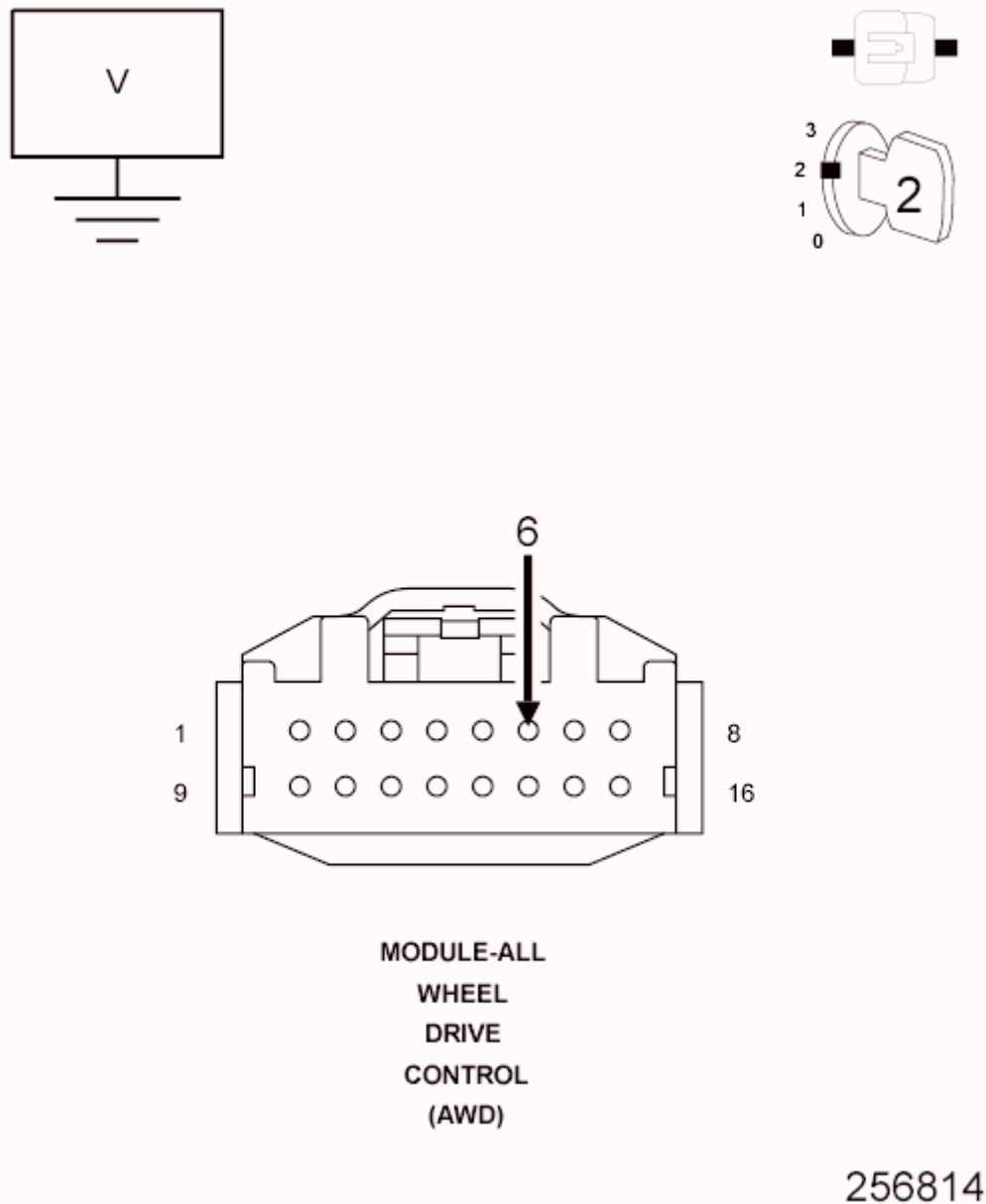


Fig. 48: Checking TIPM Fused B(+) Voltage
 Courtesy of CHRYSLER GROUP, LLC

1. While back probing, measure the voltage of the (A923) Fused B+ circuit in the TIPM C7 harness connector.

Is the voltage below 17 volts?

Yes

- Go To 4

No

- Go To 5

4. AWD CONTROL MODULE

NOTE: Before continuing, check the AWD Module harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors.
2. Pay particular attention to all Power and Ground circuits.

.

Repair

- Replace the All Wheel Drive (AWD) Control Module in accordance with the Service information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to STANDARD PROCEDURE.

5. TOTALLY INTEGRATED POWER MODULE

NOTE: Before continuing, check the TIPM harness connector terminals for corrosion, damage, or terminal push out. Repair as necessary.

1. Using the schematics as a guide, inspect the wire harness and connectors.
2. Pay particular attention to all Power and Ground circuits.

.

Repair

- Replace the Totally Integrated Power Module in accordance with the Service Information.
- Perform the BODY VERIFICATION TEST. Refer to **STANDARD PROCEDURE** .

6. CHECK THE WIRING AND CONNECTORS

1. The conditions necessary to set this DTC are not present at this time.
2. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit.
3. Wiggle test the wiring harness and connectors while checking for shorted and open circuits.
4. Using the scan tool, monitor the data related to this circuit while performing the wiggle test. Look for the data to change or for the DTC to reset.

Were any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Test complete.

C2208-AWD ECU INTERNAL

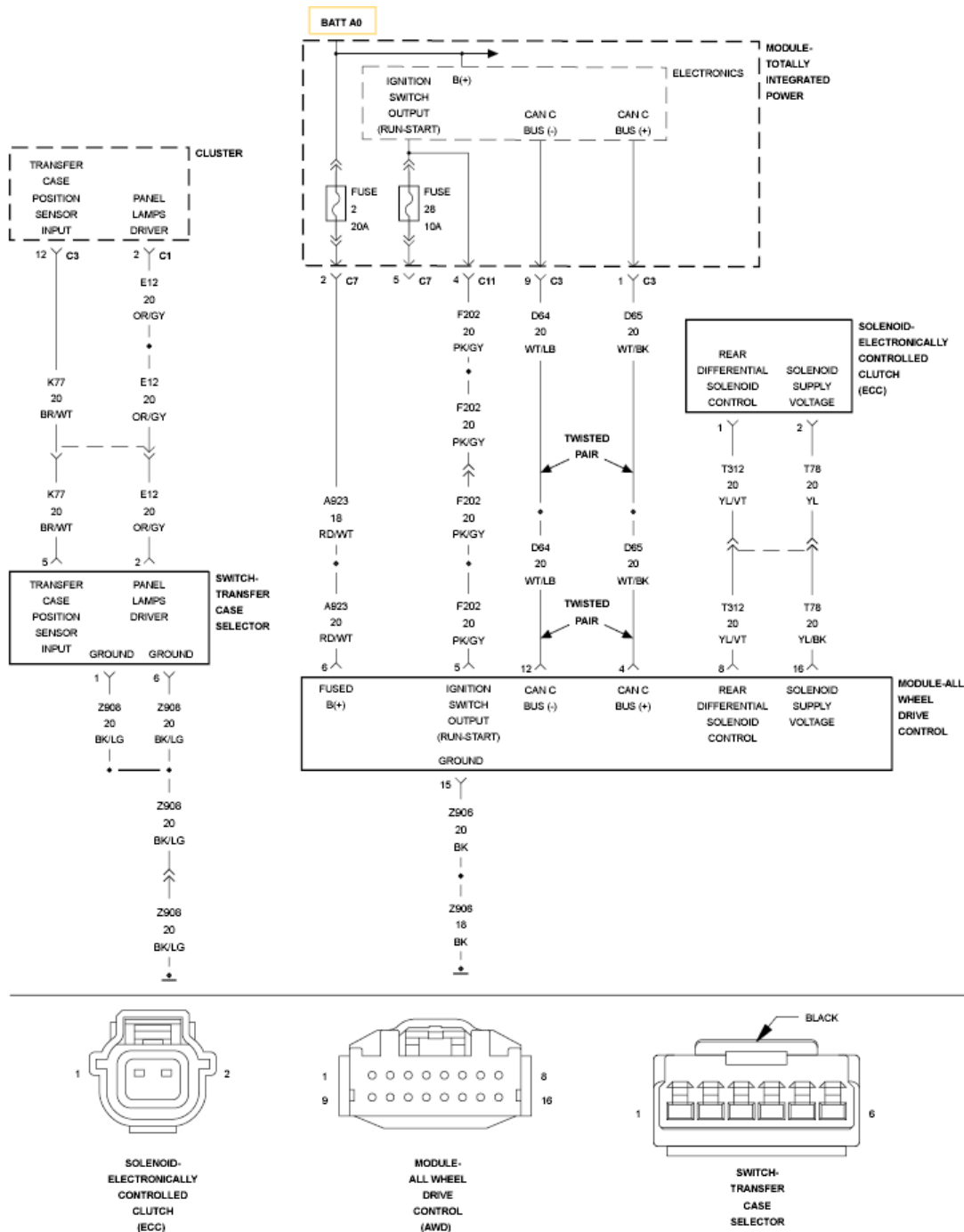


Fig. 49: All Wheel Drive Control Module Circuit Diagram
Courtesy of CHRYSLER GROUP, LLC

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

With the ignition on.

SET CONDITION

The All Wheel Drive (AWD) Module has detected a failure internal to the controller.

POSSIBLE CAUSES**Possible Causes**

(T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT
SHORTED TO VOLTAGE
ALL WHEEL DRIVE (AWD) MODULE

DIAGNOSTIC TEST**1. VERIFY THE DTC IS ACTIVE**

1. Ignition on, engine not running.
2. With the scan tool, read DTCs.

Is the DTC active at this time?

Yes

- Go To 2

No

- Go To 5

2. ALL WHEEL DRIVE (AWD) MODULE INTERNAL FAILURE

1. With the scan tool, check the AWD failure indicator light.

Is the AWD failure indicator light active at this time?

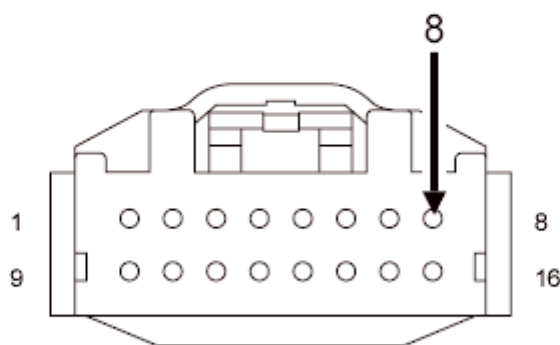
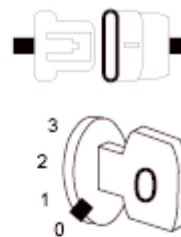
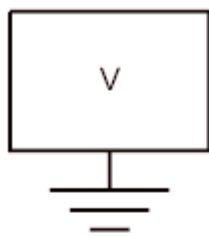
Yes

- Go To 3

No

- Go To 4

**3. (T312) REAR DIFFERENTIAL SOLENOID CONTROL CIRCUIT
SHORTED TO VOLTAGE**



MODULE-ALL
WHEEL
DRIVE
CONTROL
(AWD)

256842

Fig. 50: Checking Rear Differential Solenoid Control Circuit For A Short To Voltage

Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off to the lock position.
2. Disconnect the AWD Control Module harness connector.
3. Measure the voltage of the (T312) Rear Differential Solenoid Control circuit in the AWD Module harness connector.

Is there any voltage present?

Yes

- Repair the short to voltage in the (T312) Rear Differential Solenoid Control circuit.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Go To 4

4. ALL WHEEL DRIVE CONTROL MODULE

1. The AWD Control Module has detected an internal failure.

Repair

- Replace the All Wheel Drive (AWD) Control Module in accordance with the Service Information.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

5. INTERMITTENT WIRING AND CONNECTORS

1. The conditions necessary to set this DTC are not present at this time.
2. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit.
3. Wiggle test the wiring harness and connectors while checking for shorted and open circuits.
4. Using the scan tool, monitor the data related to this circuit while performing the wiggle test. Look for the data to change or for the DTC to reset.

Were there any problems found?

Yes

- Repair as necessary.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Test Complete.

U0001-CAN C BUS

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

THEORY OF OPERATION

The All Wheel Drive (AWD) communicates with other controllers over the CAN C bus. The AWD Module continuously monitors the bus activity and receives the messages it needs.

WHEN MONITORED

Ignition run time is greater than one second. Battery voltage between 10 and 16 volts. Engine run time greater than three seconds.

SET CONDITION

The circuit is continuously monitored. Two Trip fault.

POSSIBLE CAUSES

Possible Causes
CAN C BUS OPEN OR SHORTED CONDITION
ANTI-LOCK BRAKE SYSTEM (ABS) MODULE
ALL WHEEL DRIVE (AWD) CONTROL MODULE
OCCUPANT RESTRAINT CONTROLLER
POWERTRAIN CONTROL MODULE (PCM)
STEERING ANGLE SENSOR (SAS)
TRANSMISSION CONTROL MODULE (TCM)
TOTALLY INTEGRATED POWER MODULE (TIPM)
WIRELESS IGNITION NODE (WIN)

DIAGNOSTIC TEST

ACTIVE DTC

NOTE: For vehicle communication problems, use the scan tool

to refer to the Network Review Screen. The screen depicts a high level view of the vehicle network. Fault and problem areas appear in red. Selecting any of the network components allows access to the source of the problem.

1. Turn the ignition on.
2. With a scan tool, read DTCs.

Is the status Active for this DTC?

Yes

- Refer to **DIAGNOSIS AND TESTING** and perform the U0001-CAN C BUS CIRCUIT diagnostic procedure.

No

- Refer to **DIAGNOSIS AND TESTING** and perform the STORED LOST COMMUNICATION DTCs diagnostic procedure.

U0002-CAN C BUS OFF PERFORMANCE

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

Ignition run time is greater than one second.

Battery voltage between 9 and 16 volts.

Engine run time greater than three seconds.

SET CONDITION

Bus messages not received from the Totally Integrated Power Module (TIPM) for approximately two to five seconds.

POSSIBLE CAUSES

Possible Causes
CAN BUS CIRCUITS OPEN OR SHORTED

DTCS RELATED TO BATTERY VOLTAGE, IGNITION, OR VIN
MESSAGES

TOTALLY INTEGRATED POWER MODULE POWER AND GROUND
TIPM NOT CONFIGURED CORRECTLY

TOTALLY INTEGRATED POWER MODULE (TIPM)
MODULE THAT SET THIS DTC

DIAGNOSTIC TEST

ACTIVE DTC

1. Ignition on, engine not running.
2. With the scan tool, select view DTCs.

Is the DTC Active at this time?

Yes

- Diagnose the U0002-CAN C BUS OFF PERFORMANCE as the U0001-CAN C BUS CIRCUIT test. Refer to **DIAGNOSIS AND TESTING** and perform the U0001-CAN C Bus diagnostic procedure.

No

- Refer to **DIAGNOSIS AND TESTING** and perform the STORED LOST COMMUNICATION DTCs diagnostic procedure.

U0100-LOST COMMUNICATION WITH THE ECM/PCM

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

Ignition run time is greater than one second.

Battery voltage between 9 and 16 volts.

Engine run time greater than three seconds.

SET CONDITION

Bus messages not received from the Powertrain Control Module (ECM/PCM) for approximately two to five seconds.

POSSIBLE CAUSES

Possible Causes
<p>CAN BUS CIRCUITS OPEN OR SHORTED</p> <p>DTCS RELATED TO BATTERY VOLTAGE, IGNITION, OR VIN MESSAGES</p> <p>POWERTRAIN CONTROL MODULE POWER AND GROUND</p> <p>TIPM NOT CONFIGURED CORRECTLY</p> <p>POWERTRAIN CONTROL MODULE (ECM/PCM)</p> <p>MODULE THAT SET THIS DTC</p>

DIAGNOSTIC TEST

ACTIVE DTC

1. Ignition on, engine not running.
2. With the scan tool, select view DTCs.

Is the DTC Active at this time?

Yes

- Perform the U0100-LOST COMMUNICATION WITH ECM/PCM diagnostic procedure. Refer to **DIAGNOSIS AND TESTING** .

No

- Refer to **DIAGNOSIS AND TESTING** and perform the STORED LOST COMMUNICATION DTCs diagnostic procedure.

U0121-LOST COMMUNICATION WITH ABS

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

Ignition run time is greater than one second.

Battery voltage between 9 and 16 volts.

Engine run time greater than three seconds.

SET CONDITION

Bus messages not received from the Totally Integrated Power Module (TIPM) for approximately two to five seconds.

POSSIBLE CAUSES

Possible Causes
CAN BUS CIRCUITS OPEN OR SHORTED
ABS MODULE
DTCS RELATED TO BATTERY VOLTAGE, IGNITION, OR VIN MESSAGES
TOTALLY INTEGRATED POWER MODULE POWER AND GROUND
TIPM NOT CONFIGURED CORRECTLY
TOTALLY INTEGRATED POWER MODULE (TIPM)
MODULE THAT SET THIS DTC

DIAGNOSTIC TEST

ACTIVE DTC

1. Ignition on, engine not running.
2. With the scan tool, select view DTCs.

Is the DTC Active at this time?

Yes

- Refer to **DIAGNOSIS AND TESTING** and perform the U0121-LOST COMMUNICATION WITH ANTI-LOCK BRAKE MODULE diagnostic procedure.

No

- Refer to **DIAGNOSIS AND TESTING** and perform the STORED LOST COMMUNICATION DTCs diagnostic procedure.

U0141-LOST COMMUNICATION WITH IPM (FCM/TIPM)

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

WHEN MONITORED

Continuously when the ignition is on.

The battery voltage between 10.0 and 16.0 Volts.

Ignition Off Draw (IOD) fuse installed.

Totally Integrated Power Module (TIPM) is configured correctly.

SET CONDITION

Bus messages not received from the Totally Integrated Power Module (TIPM) for approximately two to five seconds.

POSSIBLE CAUSES

Possible Causes
CAN BUS CIRCUITS OPEN OR SHORTED
DTCS RELATED TO BATTERY VOLTAGE, IGNITION, OR VIN MESSAGES
TOTALLY INTEGRATED POWER MODULE POWER AND GROUND
TIPM NOT CONFIGURED CORRECTLY
TOTALLY INTEGRATED POWER MODULE (TIPM)
MODULE THAT SET THIS DTC

DIAGNOSTIC TEST

VERIFY DTC IS ACTIVE

NOTE: Make sure the IOD fuse is installed and the battery is fully charged before proceeding.

1. Turn the ignition on.
2. With the scan tool, read active DTCs.

Is this DTC active?

Yes

- Refer to **DIAGNOSIS AND TESTING** and perform the U0141-LOST COMMUNICATION WITH IPM (FCM/TIPM) diagnostic procedure.

No

- Refer to **DIAGNOSIS AND TESTING** and perform the STORED LOST COMMUNICATION DTCs diagnostic procedure.

U0401-IMPLAUSIBLE DATA RECEIVED FROM ECM/PCM

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article

WHEN MONITORED

Continuously with the ignition on, one valid CAN message received at least once, and no U0002-CAN C Bus Off Performance DTC present.

SET CONDITION

When the AWD Control Module detects an incorrect CAN message from the Power Control Module (PCM).

POSSIBLE CAUSES

Possible Causes
TIPM NOT CONFIGURED CORRECTLY
ABM CAN BUS DTCS
ENGINE DTCS
ALL WHEEL DRIVE (AWD) CONTROL MODULE

DIAGNOSTIC TEST

- CHECK FOR DTC U0401-IMPLAUSIBLE DATA RECEIVED FROM ECM/PCM**

NOTE: This DTC must be active for the results of this test to be valid.

1. Ignition on, engine not running.

2. With the scan tool, record and erase DTCs.
3. Cycle the ignition switch from off to on.
4. With the scan tool, read DTCs.

Does the scan tool display: U0401-IMPLAUSIBLE DATA RECEIVED FROM ECM/PCM?

Yes

- Go To 2

No

- The conditions that caused this code to set are not present at this time. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors.
- Perform the AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

2. CHECK IF TIPM CAN BUS DTCs ARE PRESENT

1. With the scan tool, read TIPM DTCs.

Are there any TIPM CAN BUS DTCs present?

Yes

- Perform the appropriate symptom. Refer to the **DIAGNOSTIC CODE INDEX** article .
- Perform AWD Control Module VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Go To 3

3. CHECK IF ENGINE DTCs ARE PRESENT

1. With the scan tool, read Engine DTCs.

Are there any Engine DTCs present?

Yes

- Perform the appropriate symptom. Refer to the **DTC INDEX** article .
- Perform AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Using the schematics as a guide, check the AWD Control Module pins, terminals, and connectors for corrosion, damage, or terminal push out. Pay particular attention to all power and ground circuits. If no problems are found, replace the AWD Control Module in accordance with the Service Information.
- Perform AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

U0415-IMPLAUSIBLE DATA RECEIVED FROM ABS

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article

THEORY OF OPERATION

The messages sent on the CAN bus are distinguished by an identifier (ID). Each CAN ID is defined to contain a certain number of bytes. The Transmission Control Module (TCM) verifies that it has received the proper number of bytes for each ID.

WHEN MONITORED

Continuously with the ignition on, one valid CAN ID received at least once, and no U0002-CAN Bus Off Performance DTC present.

SET CONDITION

When the TCM detects an incorrect CAN ID from the ABS control module.

POSSIBLE CAUSES

Possible Causes
TIPM CAN BUS DTCS PRESENT
ABS DTCS PRESENT

ALL WHEEL DRIVE (AWD) CONTROL MODULE

DIAGNOSTIC TEST

1. CHECK FOR TIPM CAN BUS DTCS

1. With the scan tool, read TIPM DTCS.

Are there any TIPM CAN BUS DTCS present?

Yes

- Refer to the **DIAGNOSTIC CODE INDEX** article and perform the appropriate symptom.
- Perform AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Go To 2

2. CHECK IF ABS DTCS ARE PRESENT

1. With the scan tool, read ABS DTCS.

Are there any ABS DTCS present?

Yes

- Refer to **DIAGNOSIS AND TESTING** and perform the appropriate symptom.
- Perform AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Using the schematics as a guide, check the AWD Control Module pins, terminals, and connectors for corrosion, damage, or terminal push out. Pay particular attention to all power and ground circuits. If no problems are found, replace the PCM/TCM in accordance with the Service Information.
- Perform AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

U0423-IMPLAUSIBLE DATA RECEIVED FROM CLUSTER/CCN

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article

THEORY OF OPERATION

The messages sent on the CAN bus are distinguished by an identifier (ID). Each CAN ID is defined to contain a certain number of bytes. The All Wheel Drive (AWD) Control Module verifies that it has received the proper number of bytes for each ID.

WHEN MONITORED

Continuously with the ignition on, one valid CAN ID received at least once, and no U0002-CAN Bus Off Performance DTC present.

SET CONDITION

When the AWD Control Module detects an incorrect CAN ID from the CLUSTER/CCN.

POSSIBLE CAUSES

Possible Causes
<p>TOTALLY INTEGRATED POWER MODULE (TIPM) NOT CONFIGURED CORRECTLY</p> <p>CAN BUS DTCs PRESENT</p> <p>CLUSTER/CCN MODULE DTCs PRESENT</p> <p>ALL WHEEL DRIVE (AWD) CONTROL MODULE</p>

DIAGNOSTIC TEST

1. CHECK FOR TIPM CAN BUS DTCS

1. With the scan tool, read TIPM DTCs.

Are there any TIPM CAN BUS DTCs present?

Yes

- Perform the appropriate diagnostic procedure. Refer to the **DIAGNOSTIC CODE INDEX** article .

- Perform AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

No

- Go To 2

2. CHECK IF CLUSTER/CCN DTCS ARE PRESENT

1. With the scan tool, read CLUSTER/CCN DTCs.

Are there any CLUSTER/CCN DTCs present?

Yes

- Perform the appropriate diagnostic procedure Refer to **DIAGNOSIS AND TESTING** .
- Perform AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

No

- Using the schematics as a guide, check the AWD Control Module pins, terminals, and connectors for corrosion, damage, or terminal push out. Pay particular attention to all power and ground circuits. If no problems are found, replace the AWD Control Module in accordance with the Service Information.
- Perform AWD CONTROL MODULE VERIFICATION TEST.
Refer to **STANDARD PROCEDURE**.

U1113C-LOST WHEEL SPEED MESSAGES

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

THEORY OF OPERATION

The ABS communicates with other controllers over the CAN C bus. The AWD Module continuously monitors the bus activity and receives the messages it needs. The CAN C bus is also used to communicate AWD Control Module MIL status to the Engine Controller, therefor if the Engine Controller is unable to communicate with the AWD Control Module, the Engine Controller will light

the MIL.

WHEN MONITORED

Ignition on.

SET CONDITION

The AWD does not receive a vehicle speed signal from the Anti-lock brake Module over the CAN C bus.

POSSIBLE CAUSES

Possible Causes
CAN C BUS CIRCUIT OPEN OR SHORTED
ANTI-LOCK BRAKE (ABS) MODULE
ALL WHEEL DRIVE (AWD) CONTROL MODULE

Always perform the Pre-Diagnostic Troubleshooting procedure before proceeding. Refer to STANDARD PROCEDURE.

DIAGNOSTIC TEST

1. ACTIVE DTC

NOTE: For vehicle communication problems, use the scan tool to refer to the Network Review Screen. The screen depicts a high level view of the vehicle network. Fault and problem areas appear in red. Selecting any of the network components allows access to the source of the problem.

1. Ignition on, engine not running.
2. With a scan tool, select View DTCs.

Is the status Active for this DTC?

Yes

- Go To 2

No

- Perform the CHECKING FOR AN INTERMITTENT DTC Diagnostic Procedure. Refer to **INTERMITTENT CONDITION** for 2.0L/2.4L engine or **INTERMITTENT CONDITION** for 2.2L diesel. .
- Perform AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

2. U0121-LOST COMMUNICATION WITH ANTI-LOCK BRAKE MODULE ALSO SET

1. With a scan tool, select View DTCs.

Is the DTC U0121-LOST COMMUNICATION WITH ANTI-LOCK BRAKE MODULE also set?

Yes

- Perform the diagnostic procedure for U0121-LOST COMMUNICATION WITH ANTI-LOCK BRAKE MODULE. Refer to **DIAGNOSIS AND TESTING** .
- Perform AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Replace the AWD Control Module in accordance with the Service information. Refer to **REMOVAL**
- Perform AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

U1415-IMPLAUSIBLE/MISSING VEHICLE CONFIGURATION RECEIVED

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article

WHEN MONITORED

Continuously with the ignition on.

SET CONDITION

When the All Wheel Drive (AWD) Module detects an incorrect CAN messages

from the Engine Control Module (ECM) or the Totally Integrated Power Module (TIPM).

POSSIBLE CAUSES

Possible Causes
TOTALLY INTEGRATED POWER MODULE (TIPM) NOT CONFIGURED CORRECTLY TIPM CAN BUS DTCS ENGINE DTCS ALL WHEEL DRIVE (AWD) CONTROL MODULE

DIAGNOSTIC TEST

1. CHECK IF TIPM CAN BUS DTCS ARE PRESENT

1. With the scan tool, read TIPM DTCS.

Are there any TIPM CAN BUS DTCS present?

Yes

- Perform the appropriate diagnostic procedure. Refer to **DIAGNOSTIC CODE INDEX** .
- Perform AWD VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Go To 2

2. CHECK IF ENGINE DTCS ARE PRESENT

1. With the scan tool, read Engine DTCS.

Are there any Engine DTCS present?

Yes

- Perform the appropriate diagnostic procedure. Refer to the **DTC INDEX** article .
- Perform AWD VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Using the schematics as a guide, check the AWD Module pins, terminals, and connectors for corrosion, damage, or terminal push out. Pay particular attention to all power and ground circuits. If no problems are found, replace the AWD Module in accordance with the service information.
- Perform AWD VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

STANDARD PROCEDURE

AWD - PRE-DIAGNOSTIC TROUBLESHOOTING PROCEDURE

For a complete wiring diagram **refer to appropriate SYSTEM WIRING DIAGRAMS article** .

Perform the following pre-diagnostic troubleshooting procedures prior to performing any diagnostic test.

Always perform diagnostics with a fully charged battery to avoid false symptoms.

1. With the scan tool, read ABS DTCs. If ABS DTCs are present, and perform to the appropriate diagnostic procedure(s) before proceeding. Refer to **DIAGNOSIS AND TESTING** .
2. Check the vehicles repair history.
3. If the vehicle has a repair history that pertains to the customer's current complaint, review the repair.
4. Check for any TSBs related to the customer's complaint.
5. Inspect the vehicle for any aftermarket accessories that may have been installed incorrectly.
6. With the scan tool, read All Wheel Drive (AWD) Control Module DTCs. Record all Stored, Active, and Pending DTC information. Diagnose any Pending DTC as a matured DTC.
7. Use the wiring diagram as a guide, inspect the wiring and connectors related to this circuit and repair as necessary.
8. Refer to the When Monitored and Set Conditions for this DTC. DTCs can

set at ignition on, at start up, driving under specific conditions, and after controller diagnostic monitors have run or otherwise known as a Good Trip.

9. Check for any Service Information Tune-ups or Service Bulletins for any possible causes that may apply. Check for controller software update information. Some conditions can be corrected by upgrading the Engine (PCM) controller software.

Did any of the above procedures repair the vehicle?

Yes

- Testing is complete.
- Perform AWD CONTROL MODULE VERIFICATION TEST. Refer to **STANDARD PROCEDURE**.

No

- Repair complete.

AWD CONTROL MODULE VERIFICATION TEST

DIAGNOSTIC TEST

AWD CONTROL MODULE VERIFICATION TEST

1. Disconnect all jumper wires and reconnect all previously disconnected components and connectors.
2. With the scan tool, select Clear Stored DTCs.
3. Make sure that all accessories are turned off and that the battery is fully charged.
4. Test drive the vehicle and verify proper operation.
5. With the scan tool, select View DTCs in the AWD Control Module.

Are there any DTCs present in the AWD Control Module?

Yes

- Perform the appropriate diagnostic test. Refer to **DIAGNOSIS AND TESTING**.

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No

- Repair is complete.